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ABSTRACT

Of the 19 projects conducted as part of the Defense Conversion Adjustment (DCA) Demonstration administered by the U.S. Department of Labor's Office of Work-Based Learning, 9 tested the dislocation aversion approach. The projects attempted to alleviate the negative impacts of defense cutbacks on communities, firms, and workers. Six projects concentrated exclusively on dislocation aversion strategies, and three also included activities promoting worker mobility goals. The services provided by the projects tended to address the following stages of conversion: (1) assessing current status and conversion opportunities; (2) developing strategic business plans for conversion; (3) delivering training to workers and managers; and (4) implementing planned changes and helping workers apply new skills in the transformed work environment. The following were among the factors identified as critical to successful dislocation aversion: achieving agreement about conversion goals; using project services as strategic tools to support conversion goals; setting realistic time frames; tailoring project services to firms' needs and conversion goals; balancing public and private sector roles; developing collaborative partnerships between management and workers; providing applied training of sufficient intensity; selecting trainees based on strategic business needs; and establishing an appropriate mix of specific technical skills and generic high-performance work organization skills. (Appendixes constituting approximately 50% of this document contain profiles of the nine projects testing the dislocation aversion approach and fact sheets for six additional DCA projects.) (MN)

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Responses to Defense Cutbacks: The Dislocation Aversion Approach

Research and Evaluation Report Series 97-C

U.S. Department of Labor
Employment and Training Administration
1997

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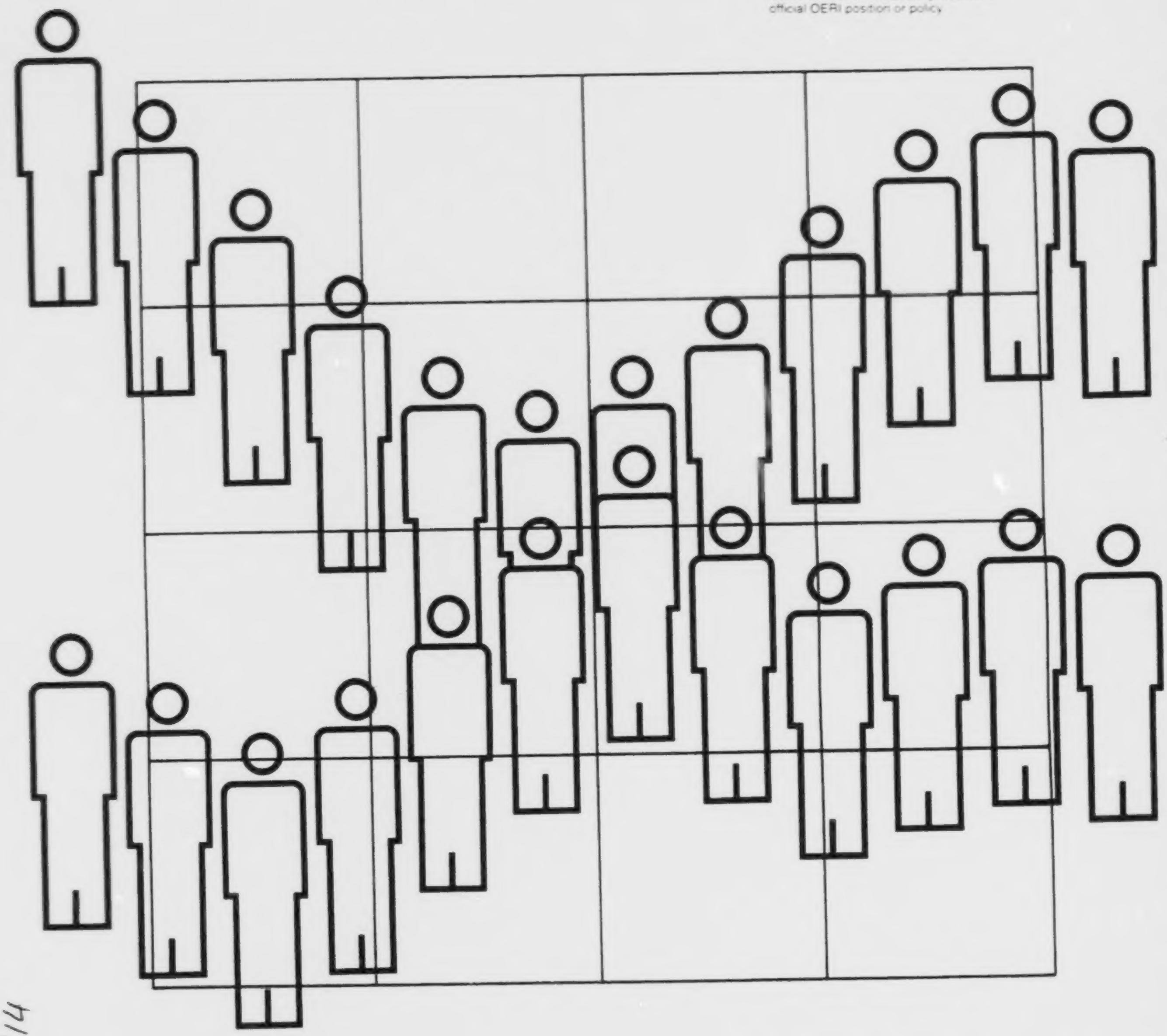

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Responses to Defense Cutbacks: The Dislocation Aversion Approach

Research and Evaluation Report Series 97-C

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1997

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The authors of this report would like to express their gratitude to a multitude of individuals and organizations, without whose cooperation and support this study of defense conversion practices could not have been accomplished.

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Second, we'd like to thank those who designed, operated and participated in the 19 Defense Conversion Adjustment (DCA) demonstration projects that were the primary subjects of this evaluation. These individuals, businesses and communities were truly pioneers in testing brand new ways of thinking about and responding to defense cutbacks, and many worked long hours to make their ideas work. These individuals nonetheless found time to sit down with us for hours of interviews, always doing their best to provide whatever information we asked for.

Third, we would like to thank those individuals and organizations who operated the "supplementary projects" we visited who volunteered to be part of this study. We are particularly appreciative of the managers, labor representatives, and employees of those defense firms that were willing to open their doors to our research staff.

Finally, many thanks to Eric Engles, whose calm patience and fine editorial skills were exactly what we needed to get these reports done. And we thank BPA's dedicated support staff, Pat Spikes-Calvin and Sasha Gottfried, for once again producing such visually-pleasing reports.

The Authors

PREFACE

Berkeley Planning Associates (BPA) and Social Policy Research Associates (SPR) are pleased to offer this final report from the evaluation of the Defense Conversion Adjustment (DCA) demonstration. An earlier report, the ***Interim Report on Implementation,*** presented preliminary observations on the design and implementation experiences of twelve of the DCA projects (those that were funded in the first round and began operations in early 1993). This report concludes the three-year long DCA demonstration and evaluation involving a total of 19 demonstration projects.

A wide range of individuals and organizations have followed the progress of the DCA grantees, including the U.S. Departments of Labor, Defense, Commerce and Energy, experts in the field of defense conversion, members of the employment and training community and, of course, the DCA grantees themselves. No single report can easily meet the informational needs of this heterogeneous group. For this reason we have "packaged" this report in three separate volumes, with an executive summary containing information from all three volumes, so that readers can select those volumes that interest them most.

Each volume corresponds with one of the three main approaches used in this demonstration to respond to defense downsizing. **Volume I, The Community Planning Approach**, contains descriptions and analysis of the projects in the demonstration that focused on planning responses to military facility closures or mass dislocation caused by extensive defense-related downsizing in their communities. **Volume II, The Dislocation Aversion Approach**, contains descriptions and analysis of the projects that worked with at-risk defense firms to support these firms' efforts to avert laying off workers as part of their conversion strategy. **Volume III, The Worker Mobility Approach**, contains descriptions and analysis of the projects that attempted to meet the employment and training needs of workers who had lost their jobs in the defense sector. A **Summary of Findings** summarizes lessons learned and presented in all three volumes.

Readers interested in the details of how each project designed and implemented defense conversion strategies are encouraged to refer to the individual project profiles in Appendix A of each volume. We have also included one-page "fact sheets" containing basic information on all the projects using a given approach as well as several additional projects that were selected and studied to supplement information gathered from the DCA projects.

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CHAPTER I

INTRODUCTION

I. INTRODUCTION

THE DEFENSE DRAWDOWN AND THE FEDERAL RESPONSE

Largely in response to the end of the Cold War, support for a political agenda aimed at American military superiority and an increased capacity for foreign intervention gave way to one more concerned with domestic issues. As a result of the fall of the Berlin Wall and the break-up of the former Soviet Union, large cuts in U.S. defense spending were initiated. Budget analysts predicted a drop in U.S. Department of Defense (DOD) outlays of 30% between 1987 and 1997. In absolute terms, these reductions were expected to amount to an average reduction of $10 billion per year over a ten-year period. As a percentage of gross national product, defense outlays were expected to fall from 6% in 1987 to 3.5% in 1997. Defense procurement was the category of DOD expenditures that was expected to be most affected by the cutbacks. Expenditures for DOD contractors were expected to drop by $46 billion between 1987 and 1997, while expenditures for military personnel were to decline by $25 billion over the same period.[1] Thus, the defense drawdown was expected to be particularly disruptive for defense-related industries.

Major changes in federal defense appropriations have indeed occurred. By 1993, defense outlays had dropped to 4.7% of the gross national product. Real defense spending declined $48 billion dollars between 1987 and 1993, resulting in the loss of 1.65 million jobs, 989,000 of them in the private sector. Based on current budget proposals and DOD projections, further reductions totaling an additional $45 billion are expected by 1999.[2] As with the cuts experienced prior to 1993, the private sector defense industry is expected to absorb the largest share of these cuts.

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[1] Defense Conversion Commission, *Adjusting to the Drawdown*, Washington, D.C., December 1992; and U.S. Congress, Office of Technology Assessment, *After the Cold War: Living with Lower Defense Spending*, Washington, D.C., February 1992.

[2] Norman C. Saunders. 1995. "Defense-Related Employment Retrenches." *Occupational Outlook Quarterly*. Vol. 39; No.2.; Roy E. Green. (1995). "Defense Conversion: A Syntax for Action." In *Best Practices in Defense Conversion*, ed. Karl F. Seidman, National Council for Urban Economic Development, Washington, D.C.

Although these reductions are substantial, it is important to note that reductions in defense spending beginning in 1987 came on the heels of the "greatest peacetime build-up that the world has ever known."[3] Fueled by dramatic increases in defense expenditures between 1980 and 1986, the U.S. economy in the late 1980's featured the highest proportion of defense-related employment since the Vietnam War (6.2% between 1985-1987).[4] Despite substantial cuts in defense spending between 1987 and 1995, defense spending in 1995 (measured in inflation-adjusted dollars) was still at a level equal to that of the early 1980's. Thus, current reductions in defense outlays and weapons procurement budgets must be seen in relation to the significant increases that immediately preceded them.

IMPACT OF REDUCTIONS IN DEFENSE SPENDING

Recent defense expenditure reductions have affected, and continue to affect, communities with concentrations of defense–related activities, defense–dependent firms, and individual defense–industry workers and DOD civilian personnel.

At the ***community level***, cutbacks in defense spending have had particularly devastating impacts on local areas in which a high percentage of local economic activity is related to defense contracting or the operation of affected military installations. Features of these high–impact areas include:

- High numbers of workers dislocated from DOD prime contractors, civilian employment at DOD installations, or military service at affected bases.

- Major secondary effects on local employment for defense subcontractors and local suppliers.

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[3] Jacques S. Gansler. 1995. *Defense Conversion: Transforming the Arsenal of Democracy*. Boston: MIT Press, p.1.

[4] Gansler (1995), based on 1992 data from the Office of Technology Assessment.

- Tertiary effects on local retail and service jobs, resulting in overall high unemployment and economic decline.

- Limited information about how to go about planning for economic development, job creation, and alternative uses of facilities, equipment, and human resources.

- A variety of organizations, agencies, and interest groups with concerns about the situation and the ability to offer resources to develop a coordinated community response.

At the ***firm level***, cutbacks in defense spending have had the greatest impact on firms that specialize in the production of components or products that are required to meet strict defense procurement specifications. Faced with sharp cutbacks or decreased demand for their products by DOD, these firms must become competitive by developing new products and/or new markets. Defense–dependent firms are characterized by:

- Substantial experience producing limited quantities of high-cost products to meet detailed military specifications.

- Little experience investing their own funds in research and development efforts to bring new products to market.

- Little experience developing flexible or diverse product lines.

- Little experience with activity-based cost accounting, inventory control procedures, or market research.

- Little experience with cost containment or continuous improvement strategies or procedures.

- Little experience with customer service and marketing to commercial customers.

Overall, many of these firms still control sizable resources in terms of facilities and equipment and a highly trained workforce. However, they face an immediate challenge in transferring these resources to production for non-defense markets.

At the ***individual worker level***, dislocated and at-risk defense workers, separated military personnel, and laid-off civilian DOD employees seek new jobs in the non-defense sector. These workers are characterized by:

- Relatively high levels of education and technical skills.
- Relatively older ages and higher levels of unionization than other manufacturing workers.
- High wages, as much as 25% above "market value" in other industries.
- Manufacturing skills that are increasingly obsolete.
- Extensive job-related experience and training that may not be reflected in formal educational credentials.
- Familiarity with a defense industry corporate culture that emphasizes bureaucratic top-down decision making rather than participatory work teams, and technical specificity over cost control and efficiency.
- A lack of information about non-defense occupations and employers.

In their search for new jobs, some workers need relatively little help in areas such as job search assistance and short-term skills training. Others need to learn new skills to prepare them for new careers. In areas with high concentrations of defense-dependent firms or military bases, dislocated defense workers face a job market with limited reemployment opportunities, and one saturated with experienced job seekers possessing similar skills. In such cases, workers have been forced to consider relocating or seeking new jobs that may or may not build on their existing skills.

The federal government provides assistance to communities, firms, and workers affected by defense cutbacks through several programs.

FEDERAL ASSISTANCE TO IMPACTED COMMUNITIES

The federal government has responded to defense downsizing by making funds available through a variety of agencies and organizations that support a broad range of conversion activities.

The Office of Economic Adjustment (OEA) within the Department of Defense supports long-range planning in communities affected by base closures and realignments by providing planning grants and direct technical assistance to local government agencies and community groups. OEA-funded planning efforts generally focus on the re-use of military installations and defense plants. The program's budget expanded under the community initiatives provisions of the Defense Authorization and Appropriations Act of 1993. OEA was funded at $39 million for FY 95.

The Economic Development Administration (EDA) in the Department of Commerce (DOC) provides grants to support a wide range of initiatives designed to counter economic decline rooted in defense downsizing. The Sudden and Severe Economic Dislocation Program (SSED) provides grant support to help communities facing major job losses from both defense and non-defense-related dislocation. Funds may be used for technical assistance, planning, and implementation of adjustment plans supported by OEA. While plans require coordination with local education and training authorities, worker retraining is not usually a central planning focus. To enable it to respond to the needs of communities affected by current defense cutbacks, this program received expanded funding under both the National Defense Authorization Act of 1991 and the FY 1993 Defense Authorization and Appropriations Acts. As of this writing, however, the program was at risk in budget negotiations.[5]

The DOC Economic Development Administration (EDA) has coordinated with the DOD via a memorandum of understanding and interagency task forces in an effort to support community infrastructural development, particularly in areas affected by base closures. The EDA made $50 million in funds available in 1993, and increased that amount to $180 million in 1994.[6]

ASSISTANCE TO AFFECTED FIRMS

Several federal agencies have attempted to address the readjustment needs of defense-dependent firms. The National Institute for Standards in Technology (NIST) within the Department of Commerce (DOC) has allocated funds for conversion activities through its Advanced Technology Program (ATP). This program, aimed at the development of new commercial technologies, maintained a $150 million budget in 1993 and more than tripled that figure the following year.[7] Other NIST initiatives are aimed at improving the efficiency of and developing high-quality practices and procedures in the manufacturing sector of the U.S. economy.

One of the most significant federal programs designed to assist private-sector defense firms to enter new markets is the Technology Reinvestment Project (TRP). This multi-agency program was authorized by the National Defense Authorization Act of 1993, and received $605 million funding during FY 1993. The program is housed and administered in the Department of Defense's Advanced Projects Research Agency (APRA), but represents a collaborative effort on the part of many federal agencies including APRA, the Department of Energy (DOE), the National Institute for Standards in Technology (NIST) in the Department of Commerce, the National Science Foundation, the National Aeronautics and Space Administration, and the Department of Transportation. The White House National Economic Council oversees the program. TRP funds are designated to support three types of activities: (1) the development of technologies with potential commercial applications; (2) the dissemination of existing technology to support increased competitiveness of firms in defense and commercial markets; and (3) the retraining of dislocated or at-risk workers in defense-dependent firms.[8] Although the TRP's objectives are similar to those of the ATP, the TRP emphasizes the development of *dual-use* technologies in particular.

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[5] James Bridgman. 1995. "1995's Meager Base Closure Round." *The New Economy.* Vol. 6, No.2. *National Commission for Economic Conversion and Disarmament.*

[6] Woodrow W. Clark. 1994. "Defense Conversion — The Economic Conversion of the World Economies: The American Example." *Journal of Business and Industrial Marketing.* Vol. 9, No. 4.

[7] Clark, 1994.

ASSISTANCE TO AFFECTED WORKERS

The Economic Dislocation and Worker Adjustment Assistance (EDWAA) program administered under Title III of the Job Training Partnership Act by the Department of Labor (DOL) focuses on retraining and readjustment for individual dislocated workers. Although defense conversion adjustment is not explicitly addressed in the EDWAA legislation, state and substate grantees for Title III have been heavily involved in responding to the needs of workers dislocated as a result of base closures and defense plant layoffs.

To address the substantial impacts of defense cutbacks, the National Defense Authorization Act of 1991 allocated $150 million to the Department of Labor to operate a new Defense Conversion Adjustment Program (DCA), administered under Section 325 of JTPA Title III. Under the DCA program, grants were awarded to states, EDWAA substate grantees, employers, and business and labor associations to provide retraining, adjustment assistance, and placement services to individual defense workers and civilian DOD employees dislocated as a result of reductions in defense expenditures or closures of military facilities. As described in the next section, one section of the legislation creating the DCA program also called for the demonstration projects that are the subject of this report.

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[8] See "U.S. Agencies Work Together to Encourage High Technology." 1994. *Business America*. Vol. 115, No.8; Bennett Harris. 1994. "When Government Gets It Right." *Technology Review*. Vol. 97, No. 7.

In addition, the FY 1993 Defense Authorization and Appropriations Act included $75 million for the Defense Diversification Program (DDP) administered by the Department of Labor under Section 325 of the Job Training Partnership Act (JTPA) Title III. The DDP program makes grants available to states, substate grantees, employers, representatives of employees, and labor-management committees for training, adjustment assistance and employment services. Under certain circumstances, DDP funds may also be used to provide skills upgrading to employed individuals in non-managerial positions. In PY 1995, after the DCA and DDP appropriation were fully obligated, DOL received authority to continue funding DCA and DDP projects with JTPA Title III, Part B funds.

The Department of Labor also operates the Trade Adjustment Assistance Program (TAA) for dislocated workers who lose their jobs as a direct consequence of foreign competition or changes in international trade. The program, established in 1962 and changed substantially in 1974 and 1981, offers extended Unemployment Insurance (UI) benefits called Trade Readjustment Allowances (TRAs), re-employment services, and training to eligible dislocated workers. Although the program is not industry-specific, most recipients of TAA assistance are laid off from manufacturing jobs.[9] Thus, many dislocated defense workers have been determined eligible as large-scale production work is increasingly shipped overseas.

The U.S. Department of Education (DOE) has provided assistance to dislocated defense workers through the provision of funds for continuing education. In general, the DOE has attempted to support the retraining of workers who are unlikely to secure jobs in the same fields. The DOE has also undertaken specific efforts to link dislocated defense workers to public educational institutions through its consideration of new programs such as the "troops to teachers" initiative or its interest in creating high-tech classrooms.[10]

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[9] Paul T. Decker and Walter Corson. 1995. "International Trade and Worker Displacement: Evaluation of the Trade Adjustment Assistance Program." *Industrial and Labor Relations Review*, Vol. 48, No. 4.

[10] Clark, 1994.

THE DEFENSE CONVERSION ADJUSTMENT (DCA) DEMONSTRATION

Section 325(d) of Title III of the JTPA provided funding for demonstration projects as part of the DCA program to encourage and promote innovative responses to defense-related dislocations. In an initial announcement in the *Federal Register* on May 12, 1992, DOL announced the availability of approximately $5 million for projects in the areas of dislocation aversion, increased worker mobility, community planning, economic development, and local initiatives. Twelve demonstration grants were awarded in November 1992 for an initial 18-month demonstration period. Of the 12, seven subsequently received funding for an additional 12-month "option year." A second round of DCA demonstration funding was announced in the *Federal Register* on June 3, 1993, and seven additional grants totaling approximately $3.4 million were announced on November 22, 1993. Funding for an additional "option year" was not available to these projects. Although some projects received no-cost extensions beyond their planned end dates, all but one of the projects had terminated by December 1995.[11] This report presents findings on the implementation experiences and outcomes of all nineteen DCA demonstration projects.

The demonstration announcements emphasized that the purpose of the DCA demonstration projects was to undertake innovative approaches not otherwise found in standard Title III or Defense Conversion Adjustment programs. Areas of potential innovation included:

- Use of grantee organizations and administrative entities not generally responsible for dislocated worker services.

- Targeting of demonstration activities and services to individuals and groups not generally included in EDWAA services, including defense-dependent firms and impacted communities as well as individual workers dislocated or at risk of dislocation as a result of the reductions in defense spending.

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[11] The one exception was the Military Certification (MilCert) project at Clemson University in South Carolina, which was extended through June 1996.

- Provision of a wide range of services and activities related to defense conversion objectives, including, for example, formation of community task forces, business development assistance, entrepreneurial training, workforce training in high performance workplace skills and total quality management concepts, as well as training in technical fields for individual workers.

- Coordination of DCA demonstration activities with defense conversion activities supported by other funding sources (including, for example, economic development or community adjustment funding).

Although the Defense Conversion Adjustment demonstration grants were awarded under five different categories—dislocation aversion, increased worker mobility, community planning, economic development, and locally initiated—the different DCA demonstration approaches can be described using three conceptual approaches. These approaches are the community planning approach, the dislocation aversion approach, and the worker mobility approach. Some demonstrations used a single approach, while others developed designs that combined approaches.

THE COMMUNITY PLANNING APPROACH

The community-level impacts of defense cutbacks are particularly severe when defense-related facilities downsized or closed resulting in mass layoffs within a limited geographical area. In such cases, the layoffs sometimes have devastating effects on the local economy, causing substantial secondary layoffs among dependent businesses in the community and limiting the immediate employment prospects for workers affected by the original layoff. Further complications arise when, as is often the case, large numbers of workers with similar skills suddenly begin seeking jobs in an already tight labor market.

Paradoxically, the potential for disaster posed by events like military base closures or significant defense contractor downsizing provides communities with unique opportunities for social and economic revitalization. The community planning approach was designed specifically to help communities develop innovative and creative responses to the impacts of a defense-related facility downsizing or closure.

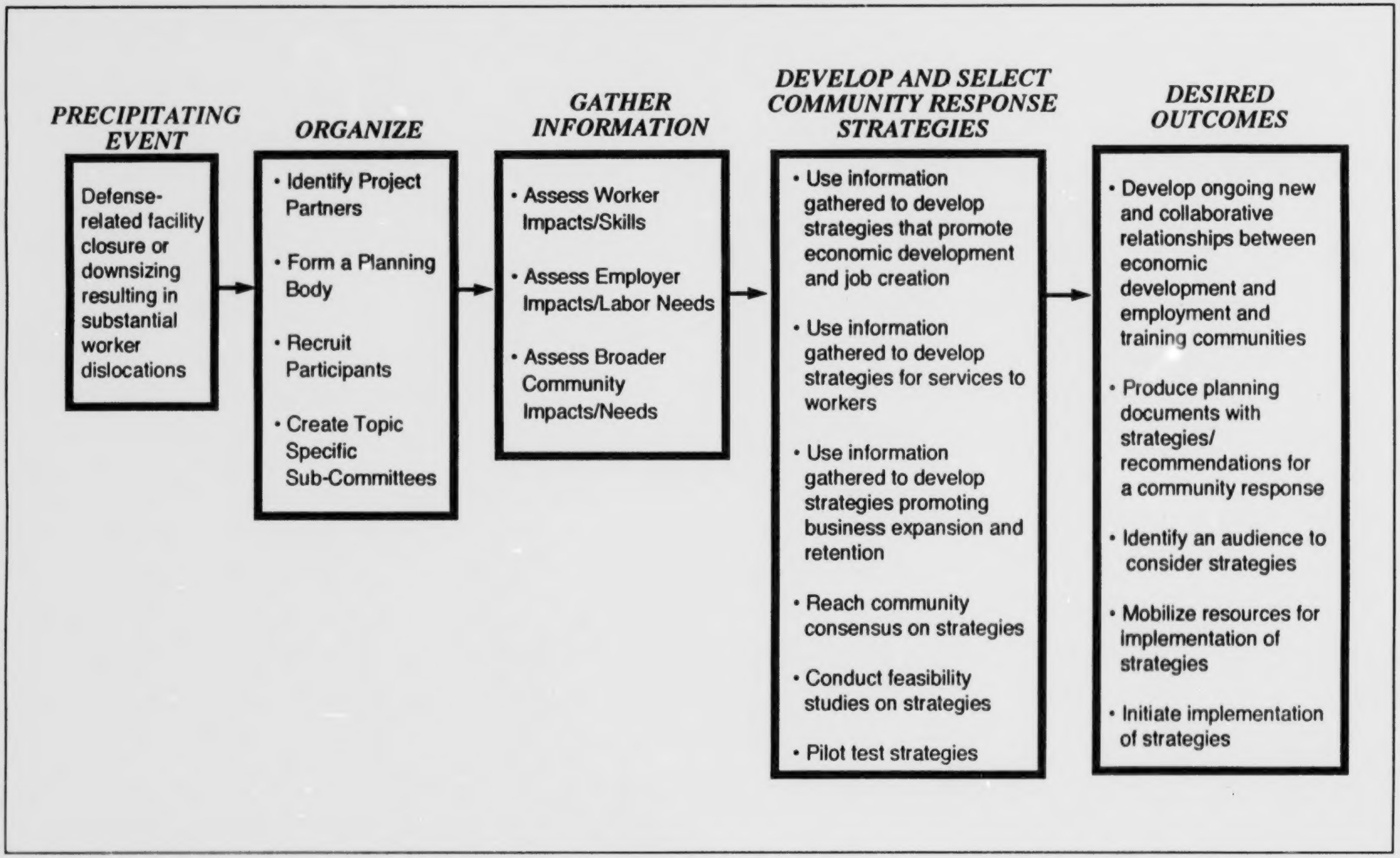
Figure I-1 depicts the strategy for the community planning approach. As shown, the precipitating event was an impending closure or downsizing of a defense-related facility in an area unusually dependent on the defense industry. The community planning approach emphasized the activities needed to develop a coherent and unified community response to the local situation. These activities included: organizing stakeholders; gathering and analyzing information; and developing and selecting community response strategies. While implementation of the community response strategies is the ultimate outcome of the planning effort, implementation was not part of the funding for the DCA demonstration projects. However, by the end of the demonstration, planning projects should have initiated activities to facilitate the implementation of recommended community strategies.

Generally, the community planning approach was designed to support, coordinate, and/or expand the formal and grassroots activities initiated by local officials, community agencies, and other interest groups. Worker adjustment services and worker retraining were usually only one set of issues on the local planning agenda. The DCA community planning demonstration provided grantees with an opportunity to ensure that human resource issues were addressed along with other community issues such as economic development.

The community planning approach represented a substantial departure from traditional EDWAA activities as well as from the activities funded under regular non-demonstration DCA or DDP grants. By funding community planning projects under the Defense Conversion Adjustment demonstration, DOL hoped to identify innovative approaches for linking workforce development issues with longer-term regional economic development and/or reuse of military facilities. Ideally, this linked planning process would also address the immediate needs of the workers dislocated from defense-related employment.

Figure I-1

COMMUNITY PLANNING APPROACH



PRECIPITATING EVENT

Defense-related facility closure or downsizing resulting in substantial worker dislocations

ORGANIZE

- Identify Project Partners
- Form a Planning Body
- Recruit Participants
- Create Topic Specific Sub-Committees

GATHER INFORMATION

- Assess Worker Impacts/Skills
- Assess Employer Impacts/Labor Needs
- Assess Broader Community Impacts/Needs

DEVELOP AND SELECT COMMUNITY RESPONSE STRATEGIES

- Use information gathered to develop strategies that promote economic development and job creation
- Use information gathered to develop strategies for services to workers
- Use information gathered to develop strategies promoting business expansion and retention
- Reach community consensus on strategies
- Conduct feasibility studies on strategies
- Pilot test strategies

DESIRED OUTCOMES

- Develop ongoing new and collaborative relationships between economic development and employment and training communities
- Produce planning documents with strategies/recommendations for a community response
- Identify an audience to consider strategies
- Mobilize resources for implementation of strategies
- Initiate implementation of strategies

THE DISLOCATION AVERSION APPROACH

In the ***dislocation aversion approach***, defense-dependent firms were assisted in restructuring their operations to compete successfully in commercial markets. In contrast to traditional EDWAA services, which assist individual workers, the intent was to reduce dislocations through early intervention for the firm as a whole to preserve the jobs of employees at risk of dislocation.

Figure I-2 depicts the general approach for projects that tested dislocation aversion strategies. The precipitating event was usually one or more defense-dependent firms experiencing a sharp decline in sales as a direct or indirect result of declining defense procurements. After identifying and selecting defense-dependent firms that were interested in (1) restructuring for competition in non-defense markets and (2) using worker retraining as one tool to further diversification or conversion efforts and prevent layoffs, projects using the dislocation aversion approach intervened to assist the firm(s) in one or more of the following processes:

(1) Assessing the firm's strengths and weaknesses and opportunities for conversion or diversification.

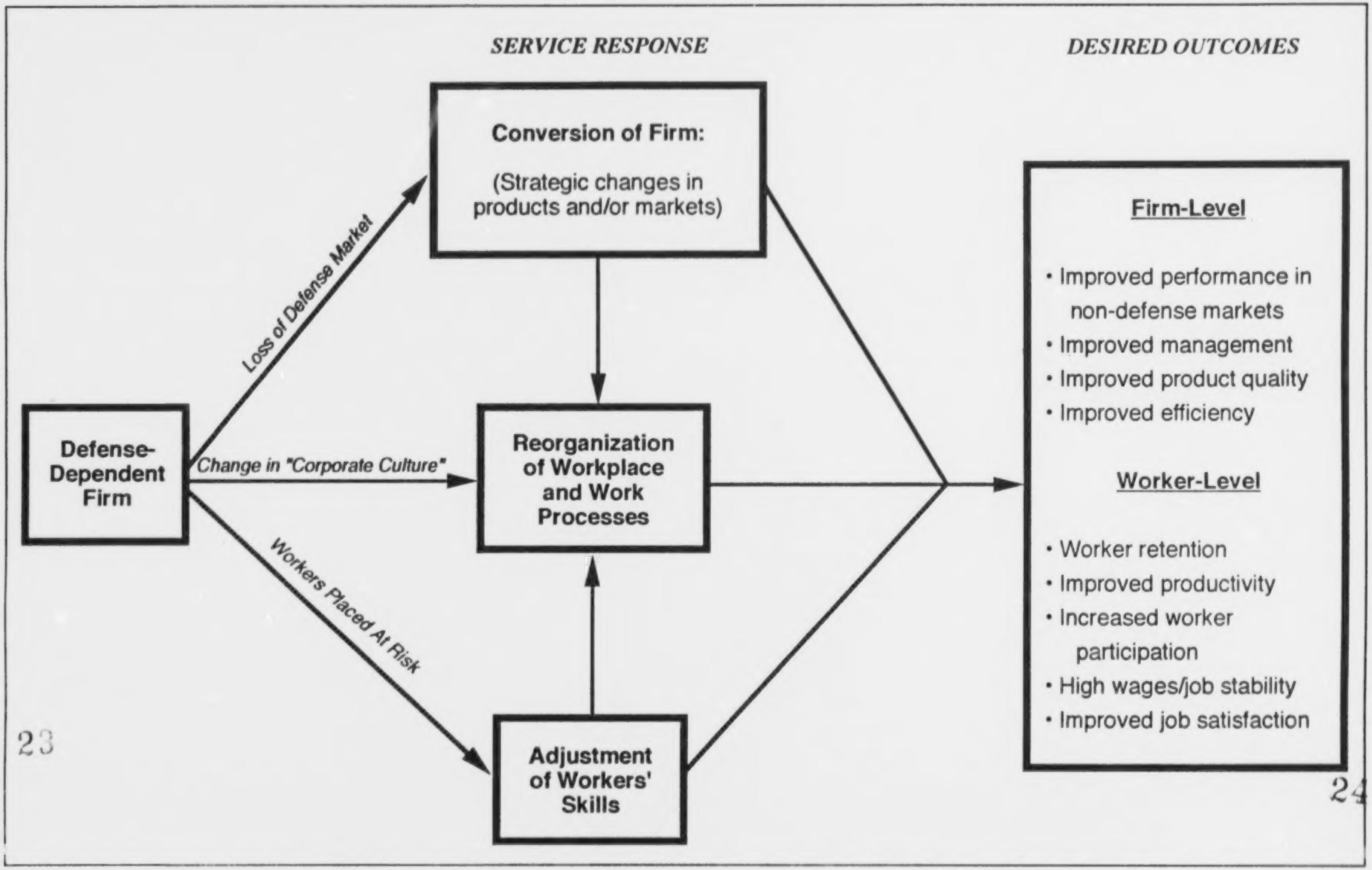
(2) Developing detailed strategic plans for conversion or diversification, including developing financing for implementing the strategic plan.

(3) Reorganizing the workplace to implement improved technologies, more flexible production procedures, or transformed worker roles and responsibilities.

(4) Providing technical assistance and training to managers in marketing, reorganization of production, financial restructuring, record-keeping, and total quality management, as needed.

(5) Retraining workers in needed technical or high performance workplace skills necessary to help the firm compete in broader markets.

Figure I-2
DISLOCATION AVERSION APPROACH


SERVICE RESPONSE
DESIRED OUTCOMES
Conversion of Firm:
(Strategic changes in products and/or markets)
Loss of Defense Market
Defense-Dependent Firm
Change in "Corporate Culture"
Reorganization of Workplace and Work Processes
Workers Placed At Risk
Adjustment of Workers' Skills
Firm-Level
• Improved performance in non-defense markets
• Improved management
• Improved product quality
• Improved efficiency
Worker-Level
• Worker retention
• Improved productivity
• Increased worker participation
• High wages/job stability
• Improved job satisfaction

Like the community planning approach, the dislocation aversion strategy represented a substantial departure from traditional EDWAA approaches. Although it was hoped that the Worker Adjustment and Retraining Notification Act (WARN) provisions for advance notification of layoffs would permit layoff aversion to occur under Title III, there is not usually enough lead time under WARN to permit successful restructuring at the company level. To be able to turn around the financial status of a troubled firm, the dislocation aversion approach needed to (1) intervene early enough to be able to positively influence the firm's financial state and (2) provide or arrange for sophisticated management assistance to guide successful restructuring.

A second important departure from mainstream EDWAA approaches was the focus on at-risk workers, as opposed to those who have already separated or received layoff notices. At-risk workers are not currently eligible for services funded under other provisions of Title III. Although it is obviously an essential part of any dislocation aversion strategy, the freedom to target at-risk workers raised a series of operational issues concerning who to select for participation, and what services to offer to affected workers. These issues were raised explicitly in the demonstration grant announcement, along with the requirement to consult with representatives of affected employees during both design and implementation of the projects.

Lastly, dislocation aversion strategies implied radically new types of training and target populations. Targeted workers included highly skilled engineers, managers, and business owners as well as production workers. As described in this report, the dislocation aversion projects provided a broad array of training approaches and curricula. In addition to employer-customized occupational skills training (some of it in advanced technical fields), training was provided in statistical process control, advanced marketing techniques, just-in-time inventory and procurement, participatory management, total quality management, teamwork, and communications skills. Training of this scope is not unknown in EDWAA, but current experience remains quite limited. Some projects may serve as models for future efforts to train highly-skilled at-risk workers, encourage employer and worker participation in curriculum design, involve management consultants and similar service providers, and develop on-the-job training practices.

THE WORKER MOBILITY APPROACH

Although a number of layoff aversion efforts were successful, large numbers of defense industry workers and civilian DOD employees nonetheless suffered dislocations as a result of reduced defense expenditures. Worker mobility projects served the needs of defense workers after dislocation occurred or when dislocation was unavoidable. Although the worker mobility demonstrations shared their general approach with the EDWAA program as well as with the Defense Conversion Adjustment and Defense Diversification programs as a whole, the DCA demonstration projectss were intended to test new and innovative ways of increasing mobility for workers affected by the defense drawdown.

Figure I-3 depicts the general worker mobility approach. The precipitating event was usually the reduction or elimination of one or more defense contracts which caused a defense-dependent firm to announce layoffs. In communities and regions hard hit by reductions in defense contracting, the precipitating event was not usually a single layoff but a number of layoffs across a wide range of firms over an extended period. Worker mobility projects were also organized in response to announcements of the closure or downsizing of military facilities that resulted in job loss for civilian DOD employees and/or military personnel.

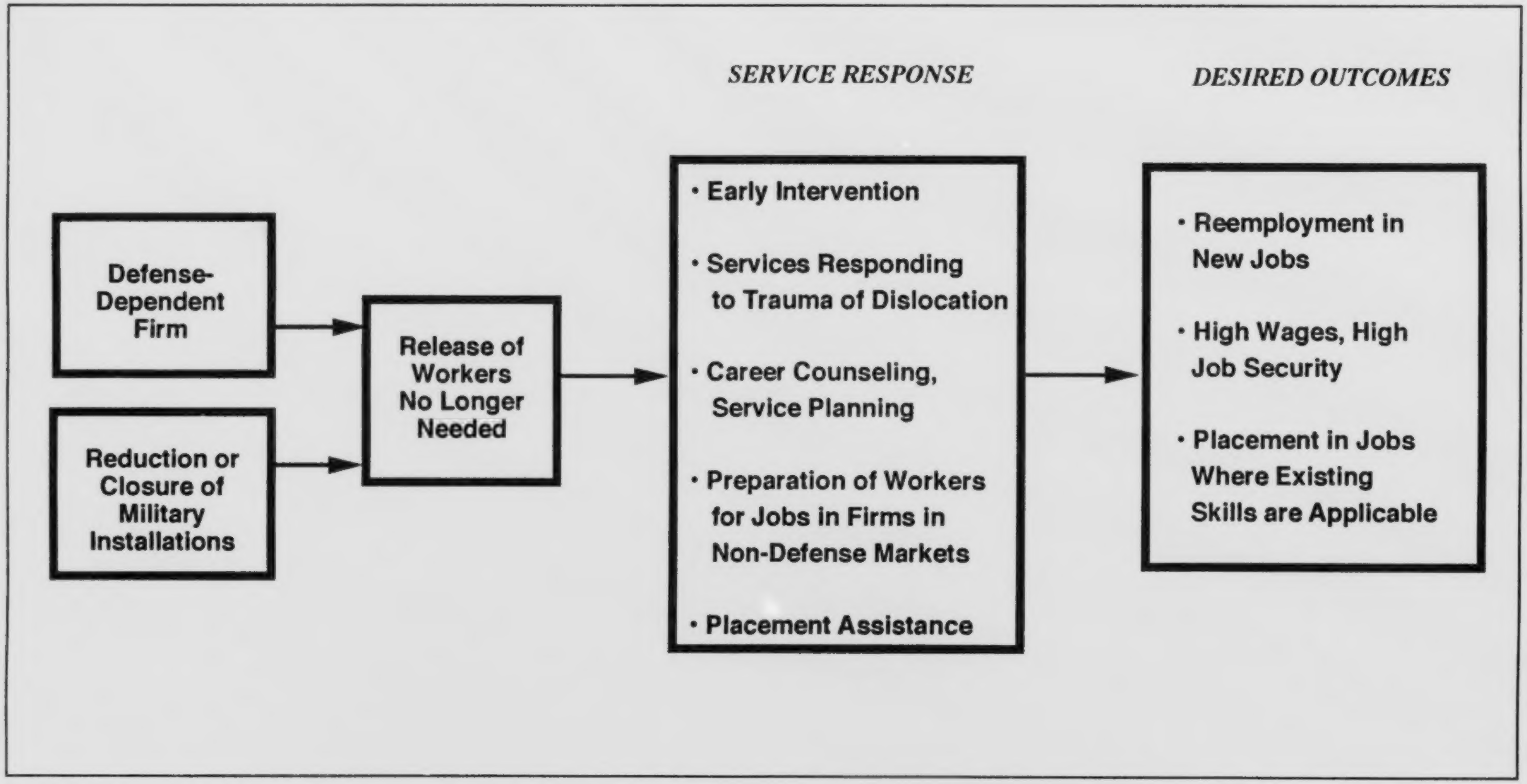
After identifying a group of workers laid off from defense-related employment, the worker mobility approach seeks to intervene as soon as possible to help affected workers obtain re-employment in high-quality jobs offering high wages, benefits, and job security. Projects using the worker mobility approach attempted to assist workers using a number of strategies, including:

(1) Providing services responding to the crisis-adjustment needs of dislocated workers, including personal and family counseling, financial counseling, and stress-management services.

(2) Assessing individual skills and interests, identifying employment barriers and transferable skills, and assisting workers in their exploration of occupational choices and their development of individual employment goals and strategies.

Figure I-3

WORKER MOBILITY APPROACH


SERVICE RESPONSE
DESIRED OUTCOMES
Defense-Dependent Firm
Reduction or Closure of Military Installations
Release of Workers No Longer Needed
• Early Intervention
• Services Responding to Trauma of Dislocation
• Career Counseling, Service Planning
• Preparation of Workers for Jobs in Firms in Non-Defense Markets
• Placement Assistance
• Reemployment in New Jobs
• High Wages, High Job Security
• Placement in Jobs Where Existing Skills are Applicable

(3) Identifying occupations in the economy that can absorb the skills of dislocated workers and assisting workers in transferring their skills to these jobs through skills certification, short-term skills enhancement, or longer-term retraining.

(4) Assisting interested individuals in starting small businesses or joint ventures aimed at transferring technology developed in the defense sector to commercial applications.

(5) Training workers in the cultural and organizational differences between defense-oriented and commercially-oriented workplaces (e.g., training in high performance workplace skills).

(6) Assisting workers in marketing their defense/military work experience to commercial employers.

(7) Assisting workers in identifying job opportunities in other geographic regions and planning for relocation.

Opportunities for innovation under the worker mobility demonstrations included (1) experimenting with new and different organizational arrangements for project administration and service delivery; (2) designing a project targeted to workers from an identified occupational grouping (e.g., aerospace designers and draftspersons) or interested in a specific re-employment occupation (e.g., primary and secondary school teaching); and (3) coordinating the worker mobility approach with job creation or economic development strategies.

Potential organizational innovations included the involvement of new types of agencies and institutions in the design and delivery of services for dislocated defense workers, as well as the development of new types of partnerships among agencies. The DCA demonstration grant announcements encouraged applications from firms, employer associations, labor associations, and other agencies, in addition to the substate entities responsible for administration of services under EDWAA.

The worker mobility demonstration projects also had the opportunity to design innovative services tailored to the specific needs of dislocated defense workers or separated military personnel. These innovations consisted of developing new skills-enhancement or retraining curricula to prepare selected target groups for new careers in the commercial sector, or new basic readjustment-service designs that prepare dislocated defense workers to market their skills to non-defense employers.

Finally, worker mobility demonstration projects experimented with linkages between economic development strategies and worker mobility approaches. In the announcement of funding availability for the Round 1 DCA demonstration grants, DOL invited proposals in a separate category called economic development. The *Federal Register* announcement encouraged applicants under this category to coordinate OEA community planning funds with demonstration funding for worker retraining to support the creation of new jobs through the reuse of vacated military facilities. While this specific configuration did not emerge under the DCA demonstration projects, several demonstration projects tried to link the achievement of worker mobility and economic development objectives by encouraging the transfer of technology and worker skills from defense applications to commercial applications; e.g., through small business startups or joint ventures between defense and non-defense firms. These projects served as examples for ways in which further efforts can coordinate worker retraining/re-employment and economic development activities.

EVALUATION OBJECTIVES AND METHODS

The evaluation of the Defense Conversion Adjustment Demonstration had three major objectives:

(1) To describe and document the implementation and short-term outcomes of the demonstration projects as they relate to the specific problems faced in defense-related dislocations.

(2) To identify exemplary approaches to the specific problems faced in defense-related dislocations.

(3) To identify the factors that facilitate or impede the success of various responses to defense conversion.

To accomplish these objectives, the evaluation design required the collection of qualitative and quantitative information to describe or evaluate (1) the design of the demonstration projects, (2) how the demonstrations evolved over time to meet the distinct challenges posed by their environments and individual objectives, and (3) what they accomplished. While data collection procedures were designed to provide comparable data across the projects, they also maintained enough flexibility to capture the unique and innovative features of each project.

DATA COLLECTION AND ANALYSIS

Qualitative data on project designs, implementation experiences, and outcomes were collected through intensive site visits to each of the 19 demonstration projects. These visits were supplemented by ongoing reviews of relevant written materials, such as project proposals and quarterly progress reports submitted to DOL. This report includes findings based on two or three site visits to each DCA demonstration project conducted over the period of its operation.

Qualitative data collection was guided by a series of written topic guides[12] for discussions with:

- Project administrators and other demonstration partners.
- Participating firms.
- Worker representatives.
- Agencies or individuals involved in the design or delivery of business services to firms.
- Agencies or individuals involved in the design or delivery of services to dislocated or at-risk defense industry workers.

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[12] We developed different versions of the data collection tools for use at projects testing different defense conversion approaches. For some discussion guides, we developed two versions—one for projects serving at-risk workers and one for projects serving dislocated workers. For other guides, we designed separate sections or modules within a single guide for use at projects testing particular approaches.

- Selected workers receiving demonstration services.
- Representatives of other community agencies.

While on site, field researchers also reviewed written case file records for individual participants and written curriculum materials for worker services.

ADDITION OF SUPPLEMENTARY SITES

Although there were 19 DCA demonstration projects included in the evaluation, it was difficult to identify patterns of success and failure because the projects represented widely varying defense conversion approaches. There were relatively small numbers of examples of each approach—dislocation aversion, worker mobility and community planning—and large variations across projects within groups. For this reason, we sought and received authorization to supplement the research by studying a limited number of *non*-DCA demonstration projects. These projects used alternative sources of federal funding to support defense conversion activities. The supplementary sites enriched the findings regarding defense conversion activities by (1) confirming the identification of successful patterns in service design and delivery, (2) adding information about strategies and designs that were not represented among the demonstration projects, and (3) increasing our ability to identify and address common issues in the defense conversion process.

For supplementary sites, we sought projects that:

- Used job-training or reemployment services as a strategy to pursue readjustment objectives or involved human resource agencies in planning responses to defense downsizing.
- Used public funds to support some aspect of services or training.[13]
- Demonstrated clear progress toward achieving conversion objectives.

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[13] Vision 2020, a supplementary project visited during the first phase of the evaluation, was funded solely by the private firm that undertook this project.

After reviewing the literature and soliciting nominations from knowledgeable respondents, we selected 17 supplementary sites, and conducted site visits to 12 of these sites. Visits to two dislocation aversion supplementary projects were conducted during the first 18 months of the evaluation; visits to three community planning projects, four dislocation aversion projects and three worker mobility projects were conducted during the last year of the study. Five additional projects, two representing the worker mobility approach and three representing the community planning approach, were contacted for in-depth telephone interviews.

OVERVIEW OF THE FINAL REPORT

This report contains three volumes and an Executive Summary. Volumes I, II, and III are each devoted to a single demonstration approach—community planning, dislocation aversion, and worker mobility. Each volume contains a cross-site discussion of the projects' key commonalities and differences, their success in meeting their objectives, and suggestions of strategies that emerge from the case studies. Each volume also includes detailed project profiles describing DCA demonstration projects pursuing the approach addressed by that volume, and one-page fact sheets describing both the demonstration projects and the supplementary sites from which data were collected.

OVERVIEW OF THIS VOLUME

Volume II presents the findings from a cross-site analysis of the DCA demonstration projects and supplementary projects that used the dislocation aversion approach. Chapter II provides an overview of the key features of the dislocation aversion projects, including discussions of their goals and objectives, recruitment and selection of firms, organizational roles and relationships, service designs and delivery, and outcomes. In Chapter III, we present key cross-site findings about successful and unsuccessful designs and strategies and how these may be applied in future dislocation aversion projects. Chapter IV presents conclusions based on the experiences of the projects and discusses implications for policymakers and program planners. Additional information on the individual projects discussed in this report is found in Appendix A, which includes detailed project profiles for the DCA demonstration projects that included dislocation aversion approaches. One-page fact sheets describing the supplementary projects are found in Appendix B.

CHAPTER II

AN OVERVIEW OF THE DISLOCATION AVERSION PROJECTS

II. OVERVIEW OF THE DISLOCATION AVERSION PROJECTS

INTRODUCTION

Private sector firms are usually responsible for developing strategic business plans and implementing workplace restructuring and training for incumbent workers without intervention or assistance from the public sector. However, given the abrupt onset and substantial scope of the cutbacks in defense procurements starting in 1987, a number of defense-dependent firms did not have the financial resources or the "know-how" to respond to the loss of defense markets without outside assistance. To prevent layoffs among the workers at these firms, the dislocation aversion projects offered financial assistance, as well as new ways of thinking about and responding to the crisis brought about by the contraction or loss of defense markets.

Among the Defense Conversion Adjustment (DCA) demonstration grantees, a total of nine projects carried out activities designed to help at-risk defense-dependent firms avert layoffs. Figure II-1 provides a brief overview of each of the DCA projects that tested the dislocation aversion approach. These projects included:

- The "Hummer Project," which helped AM General, a prime contractor in South Bend, Indiana, to change its culture to a market-oriented approach and reorganize work processes to become a High Performance Work Organization (HPWO).

- The International Association of Machinists and Aerospace Workers (IAM) DCA demonstration, in which three defense manufacturers in southern California developed diversification plans and retrained workers to promote the use of HPWO principles in the reorganized workplace.

Figure II-1
AN OVERVIEW OF THE DCA DISLOCATION AVERSION PROJECTS

Project Name/Grantee (Amount)/Location	Firms Targeted/Participating	Goal/Strategy	Project Services/Activities	Outcomes Achieved
The "Hummer Project" Workforce Development Services (WDS) of Northern Indiana ($500,000) AM General in South Bend, Indiana and suppliers within a 200 mile radius	AM General, manufacturer of the Humvee, a lightweight tactical field vehicle. Nine participants, including AM General and eight of its suppliers	**Stabilize firm and prevent layoffs in response to declining military sales.** Assist AM General to change its culture to a market-oriented approach and reorganize work processes to become an HPWO.	Consulting services to analyze work functions and introduce team processes in each corporate division. Training for workers in communication and teamwork skills. Training in hard technical skills training for some workers.	▸ Substantial progress by AM General in restructuring. Less evidence that suppliers made significant changes. ▸ Firm documented decreases in defects and costs and increases in productivity. Firm achieved increases in commercial sales. Planned layoff of 400 workers was averted.
International Association of Machinists and Aerospace Workers' DCA Demonstration IAM Lodge 727 ($500,000) Southern California, specifically Burbank and surrounding area in Verdugo County	Defense-dependent firms with workers represented by International Association of Machinists and Aerospace Workers (IAM) that were interested in conversion. Three firms participated. Participating firms included small and medium-sized second- and third-tier defense manufacturers.	**Support conversion efforts by promoting new partnerships between labor and management to reduce costs, increase productivity, and make workers skills more flexible** Assist firms in developing and marketing commercial products, as needed, and retrain workers to promote HPWO principles in the reorganized workplace.	Individualized services to meet needs of each participating firm, including business consultants to assist in developing diversification plan and firm-specific training in basic skills, specific occupational skills, and HPWO skills.	▸ Substantial training took place at two of three participating firms. ▸ One firm was dropped after the relationship between the project and the firm's top management deteriorated. Another firm dropped its plans to restructure after a turnover in top management.
Long Island Defense Diversification Project New York State Department of Economic Development ($852,647) Long Island, New York	Defense aerospace and electronics firms interested in becoming High Performance Work Organizations (HPWOs). A total of 13 firms participated, ranging in size from 50 to 300 employees.	**Prepare defense-dependent firms to be more competitive in defense and commercial markets.** Assist firms to become HPWOs. Help local educational institutions to meet the training needs of these firms.	Assistance in the formation of labor/management teams. Consultant services to assess worker training needs. Training to support HPWO development.	▸ Capacity of local educational agencies increased. ▸ Project did not emphasize formal measurements of how training affected firm-level outcomes. ▸ Some firms made progress in increasing commercial sales.

Figure II-1 (*continued*)

Project Name/Grantee (Amount)/Location	Firms Targeted/Participating	Goal/Strategy	Project Services/Activities	Outcomes Achieved
Management Assistance and Technology Transfer Program (MATT) St. Louis County Economic Council ($933,815) St. Louis metropolitan area	Small and medium sized defense suppliers interested in conversion. A total of 19 firms participated, including a number of small family-owned firms in metal fabrication or allied manufacturing.	**Support the survival and conversion to commercial markets of defense-dependent manufacturing firms.** Provide ongoing support to management in planning for conversion and link firms to expert consultants who can help them with specific conversion and restructuring issues.	Ongoing consultations to firms on strategic plans for conversion. Assistance with self-assessment of company strengths and weaknesses. Consultant services on activity-based costing, manufacturing resource planning, and other procedures.	▸ Assisted 10 firms in completing assessments, and 16 firms with customized training. ▸ Some firms were proceeding to develop and market commercial products. In other firms, top management were not yet convinced that they needed to change the way they did business to survive.
Massachusetts Strategic Skills Program (SSP) Massachusetts Industrial Services Program ($864,986) State of Massachusetts	Small to moderate-sized defense manufacturing firms (under 500 employees) that were expecting declines in defense-related sales. A total of 20 firms participated.	**Support the stabilization and growth of defense-dependent companies that already have a strategic plan for conversion.** Help firms strengthen commercial performance and support conversion plans through training in high performance workplace skills.	Informational networking seminars for senior management. Assistance in developing training plans. Training grants with requirements for 100% firm match.	▸ Required firms to document progress toward specific objectives. ▸ Some, but not all, firms were able to document changes in work-unit performance. A number of firms grew total sales and reduced defense dependency. Some stabilized sales. Others lost ground in both defense and total sales.
Minnesota Defense Conversion Adjustment Demonstration Minnesota Department of Jobs and Training, now Minnesota Department of Employment Security ($444,142) Minneapolis-St. Paul metropolitan area	Alliant Techsystems, a defense prime contractor that designs and manufactures munitions; this firm was not interested in conversion.	**Help Alliant Techsystems preserve jobs by retaining its defense-related business.** Prepare at-risk assemblers for new jobs as entry-level machinists within the same firm. Enhance the skills of experienced machinists to enable them to perform short-run flexible production jobs previously assigned to outside suppliers.	Skills enhancement training to advanced machinists. Entry-level machinist skills training for at-risk assemblers. Training in general computer literacy and computer applications in the manufacturing workplace. Off-hours training in math, reading, and computer skills to all interested workers.	▸ Over 100 assembly workers were laid off during demonstration period. New machinist assistants were protected from layoff, at least in the short term. ▸ Although individual workers were expected to benefit from enhanced skills, training was not used to transform the way this company did business. However, advanced machinists were better able to perform setup and maintenance functions as a result of training.

Figure II-1 *(continued)*

Project Name/Grantee (Amount)/Location	Firms Targeted/Participating	Goal/Strategy	Project Services/Activities	Outcomes Achieved
Rhode Island Workforce Protection Program (WPP) Rhode Island Port Authority and Economic Development Corporation ($500,000) State of Rhode Island	Small to medium-sized Department of Defense (DOD) subcontractors or suppliers (under 100 employees) with at least 25% defense-related sales; firms interested in conversion. A total of 12 companies participated.	**Help targeted companies preserve present defense business and prepare for expansion into new markets.** Help companies use workforce training to become more competitive through the development and implementation of new technologies, work methods, products, or markets.	Help firms pay for training in a variety of content areas using a range of providers: existing classes at a public educational institution, customized on-site training , independent research projects to study market expansion options, and training of workers by experts within the firm.	‣ Some participating firms used training to support diversification efforts, others were less interested or less successful in transforming new worker skills into increased commercial business.
San Diego Defense Conversion Adjustment Demonstration San Diego Consortium and Private Industry Council ($470,660, of which $3,000 was devoted to "defense conversion roundtables") San Diego metropolitan area	Defense dependent companies of all sizes interested in information on potential applications for defense technologies in commercial industries. A total of six business roundtables were held, with attendance ranging from six to 40 firms.	**Encourage transfer of defense technology to commercial sector by firms interested in diversification.** Provide executives of defense companies with information about companies that had applied defense technologies to commercial markets.	"Defense conversion roundtables" targeted to high-level executives in defense-dependent companies: Invited guest speakers to talk about opportunities in six different industries. Informed companies about technical assistance opportunities.	‣ Roundtables were well attended. ‣ Few firms requested follow-up assistance with defense conversion.

Figure II-1 (*continued*)

Project Name/Grantee (Amount)/Location	Firms Targeted/Participating	Goal/Strategy	Project Services/Activities	Outcomes Achieved
Demonstration Project for the Conversion of Sargent Controls and Aerospace Pima County Community Services Department, Regional Reemployment Center ($749,622) Southern Arizona	A single firm participated in this project's first phase. During a second phase, the project served another 10 defense supplier firms with 50 to 500 employees, which were: (1) at least 25% defense dependent, (2) expected to be affected by DOD cutbacks, (3) were committed to change, and (4) were not "too far gone" to benefit from assistance.	Learn how to assist defense-dependent firms by working with a single firm. Help firms with conversion to commercial markets through a sequenced program of business and worker assessment, strategic planning assistance, and support for worker retraining.	Analysis of business strengths, weaknesses, and opportunities for commercialization. Identification of workforce retraining needs. Retraining in topics including marketing skills, manufacturing-based cost accounting, management sensitivity, statistical process control.	• Sargent Controls became committed to commercialization at a relatively late stage of participation. The firm achieved a reduction to 50% defense dependency, but mostly through purchase of a commercial company. • It was too soon to tell if Phase II participants made progress in developing and marketing commercial products.

- The Long Island Defense Diversification Project, which helped 13 small and moderate-sized firms in the Long Island region of New York State train their workers in HPWO skills to support reorganized work processes.

- The Management Assistance and Technology Transfer Program (MATT), which assisted 19 small and moderate-sized manufacturing firms in the St. Louis, Missouri metropolitan area in planning for conversion.

- The Massachusetts Strategic Skills Program (SSP), which helped a total of 20 manufacturing firms throughout Massachusetts strengthen their performance through training in high performance workplace skills.

- The Minnesota Defense Conversion Adjustment Demonstration, in which Alliant Techsystems, a prime contractor in the Minneapolis-St. Paul area, enhanced the skills of its experienced machinists and prepared at-risk assemblers for new jobs as entry-level machinists.

- The Rhode Island Workforce Protection Program (WPP), which assisted a total of 12 manufacturing and high technology service firms throughout Rhode Island to become more competitive through training to support the implementation of new technologies, products, or markets.

- The San Diego Defense Conversion Adjustment Demonstration, which hosted "defense conversion round tables" for defense-dependent firms in the San Diego metropolitan area.

- The Demonstration Project for the Conversion of Sargent Controls and Aerospace, which helped a single firm, Sargent Controls, use workforce retraining to support plans for conversion, and used the lessons from this experience to assist 10 additional defense suppliers in Pima County, Arizona.

Six of these projects concentrated exclusively on dislocation aversion strategies. Three projects (The IAM Demonstration, The Minnesota Defense Conversion Adjustment Demonstration Project, and the San Diego Defense Conversion Adjustment Demonstration) also included activities designed to promote worker mobility goals. The worker mobility aspects of these projects are discussed in Volume III of this report.

To provide more information about variations in the design, implementation, and effectiveness of the dislocation aversion approach, we also collected information about six supplementary projects that also helped defense firms prepare for success in commercial markets. As described in Chapter I, we selected supplementary projects that tested strategies similar to the DCA projects. To maximize the utility of the supplementary case examples, we selected projects that appeared to be successful in furthering their objectives. Two of the supplementary projects (Bath Iron Works and Chandler Evans) were funded by the Technology Reinvestment Project (TRP) administered by the Advanced Research Projects Agency (ARPA) within the Department of Defense. TRP grants were awarded to these firms to assist in the development of new products applying "dual use" technologies—technologies that have potential defense and commercial applications. Two of the supplementary projects (Amphenol Aerospace and Lockheed-Martin) received funds under a Title III National Reserve Account grant to the State of New York, under Defense Diversification Program (DDP) rules for retraining and High Performance Workplace Organization (HPWO) skills enhancements for non-management personnel. The remaining two supplementary projects were undertaken without federal funding.

Figure II-2 provides a brief overview of each of the supplementary dislocation aversion projects. The supplementary projects were:

- Amphenol Aerospace Defense Diversification Project, which assisted this large defense manufacturer in the Southern Tier Region of New York in its introduction of high performance workplace skills to all production workers, as a first step toward reorganizing the work process and becoming an HPWO.

Figure II-2
SUPPLEMENTARY PROJECTS USING THE DISLOCATION AVERSION APPROACH

Project Name/Grantee (Amount)/Location	Firms Targeted/Participating	Goal/Strategy	Project Services/Activities	Outcomes Achieved
Amphenol Aerospace Defense Diversification Program State of New York (firm received $1.6 million from $27 million Title III National Reserve Account grant, under DDP rules) Sidney, New York	Amphenol Aerospace, a division of Bendix Corporation's Connector Operations with a workforce of 1,250, manufactures sophisticated electrical inter-connect systems for a variety of military projects (jet fighters, rockets, tanks).	▸ **State project goal is job retention and employment growth. Firm goal is to expand and diversify into commercial markets and increase commercial sales.** ▸ Introduce High Performance Workplace Organization (HPWO) skills to all production workers as a first step toward high performance work organization and reorganization of work processes.	Six training components including: (1) "increasing customer focus" for 500 workers; (2) total quality management for 500 workers; (3) leadership training for 500 workers; (4) concurrent engineering for 55 workers; (5) CNC machining skills for 300 workers; and (6) computer-assisted prototype engineering design for 10 workers.	▸ Company sales increased enough to hire 150 new workers during 1995. ▸ Firm took on a very ambitious training program that it otherwise would not have been likely to undertake.
Bath Iron Works Technology Reinvestment Project A partnership between Bath Iron Works and the International Association of Machinists ($4.5 million Technology Reinvestment Project (TRP) grant from the Department of Defense (DOD). Bath, Maine	Bath Iron Works, owned by General Dynamics, is the largest employer in Maine. The firm, with 8,800 employees, builds and retrofits Aegis Destroyers for the Navy.	▸ **Preserve employment by helping Bath Iron Works become a dual-use shipyard producing for both military and niche commercial markets.** ▸ Research the technology and develop the designs for commercial ships. Transform the company into a HPWO to make the firm more competitive in commercial markets.	▸ Development of a "Commercial Shipbuilding Focused Development Project" to prepare detailed plans for the production of a commercial ship. ▸ Training for all workers in HPWO principles. ▸ Implementation of a reorganization plan that consolidates job classifications and uses in-house trainers to teach workers to perform multiple crafts and multiple functions.	▸ Although the firm will not meet its goal for completion of a commercial ship by 1997, substantial progress has been made in identifying a new commercial product. ▸ The firm is implementing joint labor/management plans for a reorganized workplace. • Labor/management relations have been transformed from adversarial to collaborative.
California Supplier Improvement Program Chancellor's Office of the California Community College System and its Economic Development Network (ED>NET) State of California	Defense aerospace manufacturers interested in improving their quality improvement programs. A total of 110 firms have completed on-site training; additional firms have participated in fee-based training workshops at community colleges.	▸ **Keep defense prime contractors in California, by improving the Total Quality Management capabilities of California's defense suppliers.** ▸ Teach defense suppliers to adopt TQM and other quality improvement programs to improve performance.	▸ Introductory workshop targeted to senior executives. ▸ Workshops or on-site training for workers in five areas: total quality management, statistical process control, just-in-time resource management, teamwork/communications, and cycle time management.	▸ Because of the disruption in defense contracting in California since 1990, the project has reached fewer firms than it intended. ▸ Several of the firms that received CalSIP services during 1993 and 1994 have used the training to aggressively pursue commercialization goals.

Figure II-2 ***[continued]***

Project Name/Grantee (Amount)/Location	Firms Targeted/Participating	Goal/Strategy	Project Services/Activities	Outcomes Achieved
Chandler Evans Technology Reinvestment Project Chandler Evans ($2 million TRP grant from DOD and loan of $1.5 million from state economic development funds) West Hartford, Connecticut	Chandler Evans, a division of Coltec Industries with a workforce of about 400, makes fuel controls for military and commercial aircraft.	▸ **Develop and market a new fuel pump to increase commercial sales and stabilize employment.** ▸ Use training to help the firm reorganize into a HPWO. ▸ Integrate commercial and defense operations in new work cells called "centers of excellence."	▸ Support for research and development for new commercial product. ▸ Worker training to support high performance work organization and ISO 9000 certification. ▸ Simplification of job classifications and multi-skill training to support conversion and reorganization efforts.	▸ New product developed. ▸ Firm reduced defense dependency from 75% to 25% over a three year period. ▸ Relationship between company and union shifted from adversarial to collaborative.
Lockheed-Martin Control Systems DDP Project State of New York (firm received $938,000 from $27 million Title III National Reserve Account grant, under DDP rules) Johnson City, New York	Lockheed-Martin Control Systems, a part of the Electronics Division of Lockheed-Martin Corporation with slightly over 1000 employees at the Johnson City plant, designs and manufactures sophisticated flight, engine, and industrial control systems.	▸ **State project goal is job retention and employment growth. Firm's goal is to become more competitive in defense market and develop viable commercial division.** ▸ Develop a "factory within a factory" to focus on the development and production of commercial products. Provide technical skills training to workers in both commercial and defense divisions.	▸ Training provided by corporate in-house instructional staff. ▸ Curriculum included specific technical skills (e.g. soldering inspection, use of automatic insertion equipment for soldering and assembly) as well as more general training in statistical process control and continuous improvement tools.	▸ Company created commercial division and hired 35 new employees with non-defense backgrounds to start-up this division. ▸ Company secured commercial contracts for the production of control systems for locomotives and off-highway vehicles.
Vision 2020 Electro-Magnetics Systems Lab (ESL), a defense contractor in Sunnyvale, California (no public funds)	This defense-oriented company with over 2000 employees designs and build intelligence systems for DOD.	▸ **Prevent dislocation as defense business shrinks by starting up commercial divisions within firm.** ▸ Create a business incubator program in a separate location close to the main company for the development of commercial "spin off" businesses.	▸ Seminars to brainstorm new commercial business ideas building on ESL's core competencies. ▸ Funding for the further development of 18 new venture ideas within the business incubator. Support for new product launches.	▸ The company abandoned efforts to continue the incubator process because of a lack of start-up capital. ▸ One new enterprise got off the ground and had about 60 employees, half of whom were former ESL employers and half of whom were outside new hires.

- Bath Iron Works Technology Reinvestment Project, in which this large prime contractor in Bath, Maine and its union developed the design for a commercial cargo ship and undertook to transform the workplace to make the firm more competitive in commercial markets.

- The California Supplier Improvement Program (CalSIP), which has provided instruction in total quality management (TQM) tools and other quality improvement approaches to more than 200 defense suppliers throughout California.

- Chandler Evans Technology Reinvestment Project, in which a moderate-sized defense supplier in West Hartford, Connecticut developed a new commercial product and used training in HPWO skills to support organizational restructuring.

- Lockheed-Martin Control Systems Defense Diversification Project, in which a large defense manufacturer in the Southern Tier Region of New York began developing a "factory within a factory" to concentrate on the development and production of commercial products.

- Vision 2020, a diversification project undertaken by a single defense firm, Electro-Magnetics Systems Lab (ESL), to create a business incubator for the development of commercial "spin off" businesses.

In the remainder of this chapter, we provide an overview of the key features of the dislocation aversion projects. This information is organized by the following topics: (1) project goals and objectives, (2) recruitment and selection of firms, (3) organizational roles and relationships, (4) service design and delivery, and (5) outcomes. In Chapter III, we present generalized findings from the dislocation aversion demonstration projects and, based on their experiences, suggest strategies for the successful design and implementation of future dislocation aversion efforts.

Additional information on the individual projects discussed in this report is found in Appendix A, which contains detailed Project Profiles for the DCA projects using the dislocation aversion approach. One-page Fact Sheets for the supplementary projects are included as Appendix B.

PROJECT GOALS AND OBJECTIVES

Among the nine DCA projects, there was widespread agreement about overall project goals. Each of these projects was designed to help firms respond to declining defense-related sales by building on their core strengths and undertaking changes that would help them compete successfully in new markets. Retention of existing workers was another goal identified by all projects. All projects, with the exception of the Minnesota Defense Conversion Adjustment Demonstration, also indicated that they were interested in helping defense-dependent firms reduce their defense dependency by developing new commercial products, finding new commercial markets for their existing products, or expanding commercial sales. Projects differed, however, in the strategies they formulated to help firms achieve these goals, and in whether firms were expected to reduce defense dependency in the short- or the long-run.

Strategies emphasized by the dislocation aversion projects included:

- Supporting firms in developing detailed plans for conversion by helping them assess ideas for commercial products and identify changes in workplace culture and organization needed for success in commercial markets.
- Encouraging firms to transform themselves into HPWOs using workforce training in teamwork, continuous improvement, and total quality management skills to support workplace reorganization efforts.
- Supporting training in specific technical or occupational skills to help participating firms prepare themselves for expansion into commercial markets.
- Strengthening the capacity of local educational institutions to provide training to support conversion efforts by local businesses.

These strategies were not mutually exclusive, as shown in Figure II-3. Supporting the development of strategic plans for conversion received particular emphasis in three projects—The IAM Demonstration, the Management Assistance and Technology Transfer Program, and the Project for the Conversion of Sargent Controls. Each of these projects devoted significant project resources to support the strategic planning process within participating firms. The San Diego Demonstration also tried to support conversion planning by providing information to interested firms about how defense technologies could be used to develop commercial products. Other projects either selected firms that had already developed strategic plans for conversion (the Massachusetts Strategic Skills Program and the Hummer Project) or placed less emphasis on commercialization as an essential short-term goal of project participation (the Rhode Island Workforce Protection Program and the Long Island Defense Diversification Project). The Minnesota Project was substantially different from the other dislocation aversion projects because it decided to work with a firm that was not interested in conversion to commercial markets, although it recognized the need to adjust to changes in the defense market.

Figure II-3

PROJECT GOALS AND STRATEGIES

DCA DEMONSTRATION PROJECTS

Project Name/Location	Help Firms Develop Strategic Plans for Conversion	Help Firms Become High Performance Workplaces	Help Firms Train Workers in a Variety of Skills to Support New Markets	Build the Training Capacity of Local Educational Institutions
The Hummer Project South Bend, Indiana		✓	✓	
International Association of Machinists and Aerospace Workers (IAM) Project Southern California	✓	✓	✓	
Long Island Defense Diversification Project Long Island, New York		✓	✓	✓
Management Assistance Technology Transfer (MATT) St. Louis area, Missouri	✓	✓		
Massachusetts Strategic Skills Project (SSP) State of Massachusetts		✓	✓	
Minnesota Defense Conversion Adjustment Demonstration Minneapolis-St. Paul, Minnesota			✓	✓
Rhode Island Workforce Protection Program (WPP) State of Rhode Island			✓	
San Diego Defense Conversion Adjustment Demonstration (DCA) San Diego area, California	✓			
Sargent Controls Pima County, Arizona	✓	✓	✓	

Projects that placed a particularly high emphasis on helping to transform defense firms into "high performance workplaces" included the Hummer Project, the Long Island Defense Diversification Project, the Massachusetts Strategic Skills Program, and the IAM Project. Several other projects encouraged participating firms to include workplace reorganization efforts and workforce retraining in teamwork skills and total quality management skills as part of a broader overall service package to prepare participating firms for entering commercial markets.

Helping firms to strengthen the specific occupational skills needed to design, manufacture, and market commercial products was also identified as a project objective by most of the DCA projects, although it sometimes received less emphasis than training in HPWO skills. For example, the MATT project emphasized the importance of improving activity-based costing and manufacturing resource planning skills for managers in the small to moderate-sized manufacturing firms that were its clients. In its second phase, the Massachusetts SSP program supported a mix of "hard" technical skills training in specific occupational areas and more generic teamwork and total quality management training to promote improved company performance. The Rhode Island WPP program funded an extremely wide range of training as long as the objective was to help the participating firm develop and implement new technologies, work methods, products, or markets.

Two of the DCA projects identified a goal of improving the capacity of local educational institutions to address the workforce training needs of local firms. The Long Island Defense Diversification Project wanted to develop a core HPWO curriculum that a variety of educational institutions could draw on in serving businesses on Long Island. The St. Paul Technical College wanted to strengthen its ability to work with other companies as a result of its participation as the key educational partner in the Minnesota Defense Conversion Adjustment Demonstration.

As shown in Figure II-4, the supplementary projects had goals that were similar to the DCA projects. About half of the supplementary projects had goals to support the early stages of commercial product development and conversion planning within the participating firms. Bath Iron Works, for example, used Technology Reinvestment Project funds to learn needed technology from commercial shipbuilding companies in Japan and Finland and prepare detailed plans for the production of a commercial cargo ship. In Vision 2020, ESL encouraged employees to brainstorm new commercial products and supported the development of commercial enterprises by setting up an internal business incubator. Most of the supplementary projects had goals of preparing firms for competition in commercial markets through a mix of workplace reorganization/workforce retraining in HPWO skills and training in specific occupational skills. Several projects undertook ambitious efforts to reorganize the workforce by simplifying job classifications and encouraging workers to develop broader skill sets (Bath Iron Works and Chandler Evans). Like two of the DCA projects, the California Supplier Improvement Program worked to increase the capacity of local educational institutions to address the workforce training needs of defense-dependent firms.

Figure II-4
PROJECT GOALS AND STRATEGIES
SUPPLEMENTARY PROJECTS

Project Name/Location	Help Firms Develop Strategic Plans for Conversion	Help Firms Become High Performance Workplaces	Help Firms Train Workers in a Variety of Skills to Support New Markets	Build the Training Capacity of Local Educational Institutions
Amphenol Aerospace Defense Diversification Program (DDP) Project Sidney, New York		✓	✓	
Bath Iron Works Technology Reinvestment Program (TRP) Project Bath, Maine	✓	✓	✓	
California Supplier Improvement Program (CalSIP) State of California		✓		✓
Chandler Evans TRP Project West Hartford, Connecticut	✓	✓	✓	
Lockheed-Martin DDP Project Johnson City, New York		✓	✓	
Vision 2020 Sunnyvale, California	✓	✓	✓	

RECRUITMENT AND SELECTION OF FIRMS

The DCA projects used several different approaches to recruit and select defense-dependent companies for participation. A total of 88 firms participated across the eight dislocation aversion projects that provided substantial services to participating firms.[1] As shown in Figure II-5, all but one of the DCA projects recruited and served multiple firms. The exception was the Minnesota Defense Conversion Adjustment Demonstration, which served Alliant Techsystems, a large defense prime contractor. Two additional projects provided particularly intensive services to one firm, while also working with other firms. The Project for the Conversion of Sargent Controls spent its first 18 months working with a single moderate-sized defense supplier. This project then applied the lessons it had learned with Sargent Controls to provide services to ten additional defense subcontractors in the Pima County, Arizona area. The Hummer Project worked primarily with AM General, a large defense prime contractor, although it also provided HPWO training to workers at eight AM General suppliers.

Figure II-5

RECRUITMENT AND SELECTION OF FIRMS

DCA DEMONSTRATION PROJECTS

Project Name/Location	Single Firm	Multiple Firms	Firm Characteristics
The Hummer Project South Bend, Indiana		✔	A large defense prime contractor manufacturing tactical field vehicles (about 1,700 employees) plus 8 suppliers
International Association of Machinists and Aerospace Workers (IAM) Project Southern California		✔	Small and medium-sized second- and third-tier defense manufacturers
Long Island Defense Diversification Project Long Island, New York		✔	Small to medium-sized defense subcontractors, mostly in aerospace and electronics industries.
Management Assistance Technology Transfer (MATT) St. Louis area, Missouri		✔	Small and medium sized defense suppliers, including a number of small family-owned metal fabrication firms
Massachusetts Strategic Skills Project (SSP) State of Massachusetts		✔	Small to moderate-sized manufacturing firms that were defense suppliers
Minnesota DCA Demonstration Minneapolis-St. Paul, Minnesota	✔		A large defense prime contractor (about 3,800 employees)
Rhode Island Workforce Protection (WPP) State of Rhode Island		✔	Small to medium-sized defense contractors or suppliers
San Diego Defense Conversion Adjustment (DCA) Demonstration San Diego area, California		✔	Defense-dependent companies of all sizes
Sargent Controls Pima County, Arizona		✔	Single defense subcontractor (170 employees), plus ten small to moderate sized supplier firms

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[1] Because it did not provide services to firms beyond an initial informational "round table," we have not included the San Diego DCA Demonstration in the discussions on characteristics of participating firms.

For the projects that worked intensively with a single firm, firm selection generally grew out of a collaborative public-private planning process that preceded the application for DCA demonstration funding. For example, the idea for the Hummer Project grew out of discussions between the union leadership at AM General and the staff of the Workforce Development Services of Northern Indiana, the local Job Training Partnership Act (JTPA) administrative entity. Similarly, the Minnesota Project grew out of a pre-award collaborative planning process that involved the union, Alliant Techsystems management, the Teamsters Service Bureau, and the local technical college.

For the projects that served multiple firms, recruitment usually occurred after the grant award had been announced and was often a time-consuming process. In recruiting interested firms, most projects tried to find firms: (1) for whom defense-related sales made up a significant proportion of total sales, (2) that expected reductions in defense-related sales, and (3) that had a clear interest in pursuing diversification/conversion. Projects varied in the size of the firms they served, the progress that firms had made in their conversion planning prior to entering the demonstration, and the range of defense-related industries they targeted.

Two of the DCA projects worked with large defense prime contractors whose primary customer at the beginning of the demonstration period was the Department of Defense. AM General manufactured the Humvee lightweight tactical field vehicle, which had been repackaged, with a few cosmetic design changes, for sale in domestic and international markets as the "Hummer" commercial vehicle. This firm entered the demonstration with a clear interest in transforming itself into a viable commercial manufacturing firm that could increase its commercial sales as its defense business shrank. Alliant Techsystems, on the other hand, a munitions manufacturer, had no commercial customers for its military product. It decided to participate in the demonstration to upgrade the occupational skills of its machinists and to give at-risk assembly workers portable skills in case they were laid off, but had no real interest or commitment to becoming a commercially-oriented firm.[2] The remaining DCA demonstration projects worked primarily with small and moderate sized defense subcontractors and suppliers. Most projects targeted firms in high technology industries (e.g., aerospace and electronics) that had potential commercial applications for their "core competencies."

There was substantial variation across firms, within projects, and across projects in whether selected firms were planning to enter commercial markets for the first time or whether they already had experience in commercial markets. Two projects—MATT and Sargent Controls—targeted firms that were highly defense-dependent. After finding that Sargent Controls' management were not as committed to conversion goals as they would have liked, the Sargent Controls Project staff continued to provide support for conversion planning to firms participating in the project's second phase, but increased the emphasis on securing strong management commitment to conversion prior to firm selection. As a result, a number of the firms participating in the second phase of the Sargent Controls Project already had substantial commercial experience. Other projects served a wide variety of firms, some of which were highly defense-dependent, and others of which already had well-established commercial sales.

As shown in Figure II-6, most of the supplementary projects involved large defense prime contractors and subcontractors.[3] Four of the six supplementary dislocation aversion projects involved facilities with over 1,000 employees. Bath Iron Works, Chandler Evans, and Lockheed-Martin Control Systems were each heavily defense-dependent at the time they were selected to participate in a publicly funded project. Bath Iron Works and Chandler Evans had made a commitment to develop a new product for commercial markets in an integrated defense-commercial production facility. Lockheed-Martin Control Systems wanted to develop a separate division to produce commercial products at lower costs. Amphenol Aerospace was already well established in commercial markets, with about 40% commercial sales in 1995.

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[2] The difference between these two firms in terms of their interest in diversification becomes instructive when comparing their outcomes. As described later in this chapter, AM General succeeded in avoiding a planned layoff by transferring workers from its Humvee division to divisions producing other commercial and defense products. In contrast, Alliant Techsystems laid off over 100 surplus assembly workers as planned when defense production declined.

[3] Although we have classified these projects as "single firm" projects, the Amphenol Aerospace and Lockheed-Martin Defense Diversification Projects were actually part of a $27 million Title III National Reserve Account grant received by the State of New York to assist a number of different defense-dependent firms throughout the state. For these two firms, project administration was the formal responsibility of the local Title III substate entity. Most design decisions, however, were made by the firms themselves.

Figure II-6

RECRUITMENT AND SELECTION OF FIRMS

SUPPLEMENTARY PROJECTS

Project Name/Location	Single Firm	Multiple Firms	Firm Characteristics
Amphenol Aerospace Defense Diversification Program (DDP) Project Sidney, New York	✔		Large manufacturer of electrical systems for military projects (1,250 employees)
Bath Iron Works Technology Reinvestment Program (TRP) Project Bath, Maine	✔		Large defense prime contractor manufacturing Aegis destroyer (8,800 employees)
California Supplier Improvement Program (CalSIP) State of California		✔	Wide range of defense aerospace manufacturers
Chandler Evans TRP Project West Hartford, Connecticut	✔		Moderate sized defense manufacturer of fuel controls for aircraft (about 400 employees)
Lockheed-Martin DDP Project Johnson City, New York	✔		Large manufacturer of flight, engine, and industrial control systems (around 1,000 employees)
Vision 2020 Sunnyvale, California	✔		Large defense contractor that designs and builds intelligence systems (over 2,000 employees)

In addition, the supplementary projects offer an example of a large defense firm, ESL, that funded its own efforts to develop new commercial products and spin off new commercial divisions, and a project administered by the Economic Development Network of the California Community College System (CalSIP) that targeted participation by small to moderate-sized defense suppliers in California. Although the CalSIP project was designed to assist defense suppliers to be competitive within defense manufacturing, several of the participating firms used the HPWO training available from this project to prepare themselves for competition in commercial markets.

ORGANIZATIONAL ROLES AND RELATIONSHIPS

PROJECT PARTNERS

The dislocation aversion projects involved participation by a number of different types of organizations. As summarized in Figure II-7, agencies responsible for the design and delivery of services to dislocated workers were involved in the administration of two-thirds of the DCA projects. Title III substate administrative entities were responsible for day-to-day administration of three of the dislocation aversion projects (the Hummer Project, the San Diego Project, and the Sargent Controls Projects) and were actively involved in project planning and coordination in a fourth project (the IAM Project). State-level agencies responsible for Title III administration were responsible for one project (the Massachusetts Strategic Skills Program) and were active partners in another project (the Long Island Defense Diversification Project).

Figure II-7

ORGANIZATIONAL ROLES AND RELATIONSHIPS

DCA DEMONSTRATION PROJECTS

Project Name/Location	Project Administrator	Involvement by Other Partners	Administrator Involvement in Services
The Hummer Project South Bend, Indiana	Substate Title III entity	Firm and union	Active (facilitator and consultant)
International Association of Machinists and Aerospace Workers (IAM) Project Southern California	Union	Local Title III entity involved in planning and coordination	Active (facilitator and service broker)
Long Island Defense Diversification Project Long Island, New York	State economic development agency, regional office	State dislocated worker unit; regional education consortium	Active (service broker)
Management Assistance Technology Transfer (MATT) St. Louis area, Missouri	Regional economic development council		Active (facilitator, service broker, and consultant)
Massachusetts Stratetic Skills Project (SSP) State of Massachusetts	State Title III agency (also assists at-risk firms)		Somewhat active (facilitator)
Minnesota Demonstration Conversion Adjustment (DCA) Demonstration Minneapolis-St. Paul, Minnesota	Union-affiliated service agency	Firm, technical college, union	Active (facilitator and service provider)
Rhode Island Workforce Protection Program (WPP) State of Rhode Island	State economic development corporation		Not very active (facilitator)
San Diego DCA Demonstration San Diego area, California	Substate Title III entity	University business services program	Active (service provider)
Sargent Controls Pima County, Arizona	Substate Title III entity	Non-profit commission for economic conversion	Active (broker and service provider)

Although Title III agencies had experience working with at-risk firms after they had announced worker layoffs and arranging for the delivery of retraining services to dislocated workers, they generally did not have experience working in partnership with companies to serve incumbent workers to prevent layoffs. One exception was the Massachusetts Industrial Services Program, responsible for the Strategic Skills Program, which had previous experience providing business assistance to at-risk firms through its administration of a state-funded loan program. In addition, staff from the New York State Dislocated Worker Unit were invited to participate as expert consultants in the formation of labor-management teams within participating firms in the Long Island Defense Diversification Project, because of their previous experience supporting the development and operation of labor-management teams associated with large-scale layoffs. State and substate Title III agencies involved in the DCA projects were generally quite interested in developing the capacity to work with businesses prior to the announcement of layoffs.

In recognition of the fact that the dislocation aversion approach was "new territory" for DOL-funded programs, a number of the dislocation aversion demonstration projects called on agencies and organizations with broader expertise as active project partners. Economic development agencies or organizations concerned with economic conversion were actively involved in the design and operation of four projects (the Long Island Defense Diversification Program, the Management Assistance and Technology Transfer Program in St. Louis, the Rhode Island Workforce Protection Program, and the Sargent Controls Project in Pima County, Arizona). In the Long Island and St. Louis projects, the DCA projects were extensions of business retention and economic conversion initiatives that were already underway within these agencies. In the Sargent Controls Project and the Rhode Island Workforce Protection Program, the DCA demonstration was developed and staffed as a new free-standing initiative. (This occurred in Rhode Island, despite the fact that the state already had a well-regarded and ongoing Competitiveness Improvement Program operated by the state Department of Employment and Training to assist companies in retraining incumbent workers.)

Three projects included educational institutions as active partners in overall project design and delivery. In the Long Island Defense Diversification Project, participation by the Long Island Regional Education Center was viewed as crucial to accomplishing this project's goal of increasing the capacity of local educational institutions to address the needs of local businesses for HPWO training for their workers. In the San Diego Project, the University of California Extension's CONNECT program had a strong track record providing services to local high tech businesses and was selected to administer this project's "conversion round tables" for local defense businesses. (CONNECT also administered this project's highly successful high tech entrepreneurial training program, described in Volume III of this report.) In the Minnesota Project, participation by St. Paul Technical College was viewed as essential in designing machinist training that would enable Alliant Techsystems workers to bring their skills up to the "industry standard" as well as to meet the production needs of the company.

The dislocation aversion projects also called on individual firms and labor unions to play active roles in project design, administration, and implementation. Two projects assigned unions or union-affiliated organizations the formal responsibility for day-to-day project administration (IAM Project and the Minnesota Project). Even where other entities had formal responsibility for project administration, firms and unions were far more than passive recipients of project services. They were often active participants in identifying training needs, developing training plans, selecting training providers, and overseeing the training process.

As summarized in Figure II-8, the supplementary projects displayed a somewhat different pattern of organizational relationships. All but one of these projects were single-firm projects in which the participating firms and their associated unions were given direct responsibility for designing and implementing the planned conversion and workplace reorganization/workforce retraining efforts. For example, although the Amphenol Aerospace and Lockheed-Martin Defense Diversification Projects were officially administered by the Chenango-Delaware-Otsego Service Delivery Area (SDA), a local Title III administrative entity, the primary initiative in designing and implementing project activities in these projects came from the participating firms. In the CalSIP project, the key administrative entity was an economic development network created by the Chancellor's Office of the California Community College System to identify and pursue projects that will help the state's community colleges to better meet the workforce training needs of local businesses.

Figure II-8

ORGANIZATIONAL ROLES AND RELATIONSHIPS SUPPLEMENTARY PROJECTS

Project Name/Location	Project Administrator	Involvement by Other Partners	Administrator Involvement in Services
Amphenol Aerospace Defense Diversification Project (DPP) Sidney, New York	Local Title III administrative entity	Firm	Not very active (facilitator)
Bath Iron Works Technology Reinvestment Project (TRP) Bath, Maine	Firm and union are joint partners		Active (service provider)
California Supplier Improvement Program (CalSIP) State of California	Economic development network of statewide community college system	Local centers for applied technology at community college campuses	Active (service broker)
Chandler Evans Technology Reinvestment Project (TRP) West Hartford, Connecticut	Firm	Union	Active (service broker and service provider)
Lockheed-Martin Defense Diversification Project (DDP) Johnson City, New York	Local Title III administrative entity		Not very active (facilitator)
Vision 2020 Sunnyvale, California	Firm (No public funding)		All activities controlled by firm

ROLES PLAYED BY PROJECT PARTNERS

As described in more detail in Chapter III, the DCA dislocation aversion projects had to invent new roles and relationships between public and private sector partners because there were no preexisting models to follow. The different models that evolved reflected different ways to balance public accountability and pursuit of public sector goals with the equally important need for private sector partners to take ownership of their efforts to become competitive in commercial markets.

Among the different roles project administrators invented for themselves were those of *facilitator*, *service broker*, and *service provider*. These roles were not mutually exclusive. Project administrators acted as *facilitators* when they consulted informally with firms about their progress in developing conversion strategies and training plans, helped firms decide how to advertise for or select training providers or business consultants, or helped company management communicate its needs to a business consultant or training provider. Project administrators acted as *service brokers* when they solicited and reviewed qualifications statements from potential service providers (business consultants or trainers), developed a recommended list of providers to participating firms, worked with service providers to develop a generic curriculum to meet the needs of a group of participating firms, or directly purchased training services on behalf of one or more participating firms. Project administrators acted as *service providers* when they directly provided formal business assessment, consultation, or training services to participating firms.

As shown in Figure II-7, most of the demonstration project administrators acted as facilitators or service brokers. Perhaps the least directive approach among the DCA demonstration projects was the facilitator role taken by the Rhode Island Workforce Protection Program. This project expected firms applying for assistance to be able to develop their own strategic plans and training goals. The project also allowed each participating firm to select its own training provider and specific training curriculum. A particularly wide range of training activities was funded across the participating firms in this project.

Somewhat more directive were projects using the facilitator role that provided some limits or guidelines for participating firms about the goals of the project and the types of services that could be supported and then let the participating firms select providers and arrange for training within these guidelines. An example of a project using this approach was the Massachusetts Skills Program, which provided guidelines for the types of training it wanted to support (HPWO training), but gave companies substantial discretion to select their own training providers. The administrator of this project was available for informal advice on the development of a sound training plan and provided a "short list" of training providers that firms could use if they wanted without obtaining competitive bids, but generally deferred to firms and training consultants on the details of training content and methods.

Service brokers, exemplified by project administrators in the Long Island Defense Diversification Project, Management Assistance and Technology Transfer (MATT) Project, and the Sargent Controls Project, played an active role in designing the service choices that were available to participating firms. For example, in brokering services to firms in its first project phase, the Long Island Defense Diversification Program arranged for all participating firms to receive training needs assessments from a consultant selected from a "short list" of approved consultants; arranged for local educational institutions to develop new educational curricula based on the training needs identified by these consultants; and offered each participating firm up to $25,000 in on-site training from these public training providers or from a private provider, if they could justify the need to use another source of training. The MATT Project offered participating firms financial support to help pay for services from a short list of business consultants prepared by the project director. In the MATT Project, the project director also provided business consultation services to firms. During its second phase, the Sargent Controls Project brokered training for ten participating firms by developing a common curriculum and arranging for firms to send workers for group training in a central location to take advantage of economies of scale in the design and delivery of training.

For projects that worked intensively with a small number of firms, project administrators sometimes took on the service provider role of business consultant. For example, in the Hummer Project, the project administrator decided she would be most effective if she located her office at the corporate offices of AM General and interacted with company, union, and consultant staff in the reorganization/retraining effort on a full-time basis. As a result, this individual came to be viewed by the firm and other project partners as a key consultant and, when necessary, a trainer. Similarly, the director of the MATT project, who used face-to-face interactions with key management staff "over endless cups of coffee" to get companies to realize the necessity for basic change, played an effective role as a business consultant.

Additional project partners also played key service provider roles in some projects. For example, in the Minnesota Project, the St. Paul Technical College was the primary service provider for at-risk machinists at Alliant Techsystems. In the San Diego DCA Demonstration, the CONNECT program at the University of California at San Diego Extension was the designer and provider of the conversion round tables and would have been the provider of conversion assistance to any businesses that had requested additional assistance. In the Sargent Controls Project, the Arizona Commission for Economic Conversion was an active partner in designing and conducting the "economic diversification analysis" provided to all participating firms.

As shown in Figure II-8, the supplementary dislocation aversion projects displayed a different pattern of organizational roles and relationships. Perhaps because the large defense contractors participating in the supplementary projects were able to take more responsibility for the development and implementation of their own conversion, reorganization, and worker retraining plans, the public sector project partners in these projects did not usually play active roles as facilitators, training brokers, or training providers. The participating firms were generally responsible for developing their training plans, selecting their providers, and overseeing both the development of detailed training curricula and the delivery of training.

In fact, in three of the supplementary projects (Bath Iron Works, Lockheed-Martin Control Systems, and Vision 2020), the primary training providers were internal corporate staff, rather than outside trainers. In the Lockheed-Martin Control Systems DDP project, professional trainers from the firm's human resources division were responsible for training workers in statistical process control and continuous improvement tools. At Bath Iron Works, company funds are being used to support in-house trainers in the provision of HPWO training. Training in specific occupational skills were provided by in-house workers who volunteered to train their co-workers to perform multiple crafts and multiple functions. In Vision 2020, ESL hired three staff with commercial industry experience to staff the business incubator. These staff were supposed to teach other ESL workers assigned to the business incubator how to conduct market research and develop a business plan.

In contrast, the CalSIP program is an example of a broker model. In this supplementary project, which targeted small- and moderate-sized defense suppliers, the project invested in the development of a standardized curriculum consisting of five workshops on topics related to total quality management and continuous improvement. The project then disseminated this curriculum to Centers for Applied Technology at ten community college campuses that offered fee-based training on these topics to individual firms in the form of tailored on-site training or campus-based training workshops.

SERVICE DESIGN AND DELIVERY

Each of the DCA projects tried to design and deliver services that matched overall project goals as well as the characteristics of the participating firms. The central implementation challenge for each of the demonstration projects was helping firms determine what their needs were and helping them meet those needs in the most effective manner.

As summarized in Figure II-9, the services actually provided by the dislocation aversion projects tended to address four different stages of conversion: (1) assessment of current status and conversion opportunities; (2) development of strategic business plans for conversion, including plans for new product development and marketing, technical changes in the production process, and workplace reorganization and workforce retraining; (3) delivery of training to workers and managers to remedy deficiencies identified during the assessment phase and prepare for the implementation of the strategic business plan; and (4) implementation of the planned changes and assisting workers in applying new skills in the transformed work environment. Some projects focused on only one of these activities; others focused on more than one either sequentially or simultaneously. Projects also varied in the extent to which they were able to meaningfully integrate activities addressing different stages of conversion. As discussed in more detail in Chapter III, projects were more successful if all project services were coordinated and linked to clear corporate objectives for entry into and/or success in commercial markets.

ASSESSMENT

Four of the dislocation aversion projects emphasized assessment as an activity to be carried out as part of the demonstration effort. Two of these projects (the MATT Project and the Sargent Controls Project) targeted firms that were early in the conversion planning process. Firms in these projects needed accurate assessments of the companies' strengths, weaknesses, and opportunities for commercial sales as inputs to inform strategic planning. The remaining two projects (the Long Island Defense Diversification Project and the Minnesota Defense Conversion Adjustment Project) emphasized detailed assessments as necessary inputs into the development of a plan for workforce training.

Figure II-9

SERVICE DESIGN AND DELIVERY
DCA DEMONSTRATION PROJECTS

Project Name/Location	Assessment	Support for Strategic Planning	Support for Workforce Training	Support for Workforce Restructuring
The Hummer Project South Bend, Indiana			✓	✓
International Association of Machinists and Aerospace Workers (IAM) Project Southern California		✓	✓	
Long Island Defense Diversification Project Long Island, New York	✓		✓	✓
Management Assistance Technology Transfer (MATT) St. Louis area, Missouri	✓	✓	✓	
Massachusetts Strategic Skills Project (SSP) State of Massachusetts			✓	✓
Minnesota Defense Conversion Adjustment Demonstration Minneapolis-St. Paul, Minnesota	✓		✓	
Rhode Island Workforce Protection Program (WPP) State of Rhode Island			✓	
San Diego Defense Conversion Adjustment (DCA) Demonstration San Diego area, California		✓		
Sargent Controls Pima County, Arizona	✓	✓	✓	

Two projects recommended that participating firms complete a detailed self-assessment of corporate strengths and weaknesses (the MATT Project and the Sargent Controls Project). Assessments by outside consultants were part of the demonstration services provided to firms in three projects. Sargent Controls project staff assigned "economic diversification teams" composed of dislocated defense workers with relevant skills to conduct detailed company assessments for participating firms to help them prepare strategic plans for conversion. The Long Island Defense Diversification Project required each participating firm to commission an outside assessment of the workforce skills that they would need to become a "high performance workplace organization" (HPWO). The St. Paul Technical College conducted a detailed functional analysis of the job requirements for machinists at Alliant Techsystems before developing a curriculum to enhance the technical skills of these workers as part of the Minnesota Project. As discussed in more detail in Chapter III, assessment activities were more successful in these projects that made it clear how the results of the assessment would be used to inform subsequent project activities.

SUPPORT FOR STRATEGIC BUSINESS PLANNING

The second stage of services to firms involved support in the development of a strategic conversion plan, including production or marketing goals, strategies for achieving these goals, and defined benchmarks and timelines to be used to assess progress toward the goals. As mentioned in the previous section, two projects (the MATT Project and the Sargent Controls Project) viewed the initial assessment phase of demonstration activities as gathering information that would be needed in the development of a strategic plan for conversion. The Sargent Controls Project initially assumed that companies would be responsible for strategic planning on their own, but discovered, through its pilot activities with Sargent Controls, that companies needed assistance with this stage. MATT targeted companies in need of support in the development of strategic plans for conversion because it believed that these were the firms for which demonstration services could help make the difference between survival and closure.

Two additional projects also developed activities appropriate for firms that were early in the conversion process. The IAM Project, which recruited a wide variety of firms, provided business consulting services to several participating firms as a precursor to retraining assistance. Business consultants identified by IAM helped company managers to understand the marketing and financial planning skills, technology upgrades, and capital they would need to be successful in entering and surviving in commercial markets. The San Diego Defense Conversion Adjustment Demonstration also tried to help defense-dependent firms begin thinking about how defense-related skills and products could be transferred to commercial markets, although it did not provide more than an initial introduction to conversion options as part of the business conversion round tables it sponsored.

SUPPORT FOR WORKFORCE RETRAINING

Each of the dislocation aversion projects, with the exception of the San Diego Project, provided support for workforce retraining as a part of demonstration-funded activities. The Management Assistance and Technology Transfer Project (MATT) did not make a sharp distinction between the business assistance services described above and workforce retraining. Nevertheless, even MATT provided training to both managers and workers, as an imbedded part of the conversion planning and assistance process associated with implementing activity-based costing (which required all workers to analyze their jobs and how individual jobs related to overall corporate goals).

A wide variety of types of training were supported by the demonstration projects. Five different categories of training provided across the demonstration projects included: (1) HPWO skills including decision-making, communication, leadership, teamwork, and continuous improvement skills; (2) TQM skills including statistical process control, process analysis tools (such as Pareto analysis and fishbone charts), and process simplification skills; (3) basic skills, such as reading, math, and English language skills; (4) specific technical or occupational skills such as commercial automotive painting, soldering techniques, machinist skills, or blueprint reading skills; and (5) specific occupational skills needed for entry into commercial markets, such as marketing and customer service skills. Most projects encouraged both managers and non-management workers to participate in training as part of the demonstration activities; some projects used demonstration funds to support the training of both workers and managers, while other projects required firms to use their own resources to support training of managers.

The five demonstration projects whose goals included helping firms to become high performance workplaces often supported training designed to help workers and managers understand the principles of high performance (e.g., teamwork, decentralization of problem-solving, and encouragement of worker initiative) and develop the skills needed to apply these principles in the workplace. Training often covered both the "soft" HPWO skills of teamwork and leadership skills and the "hard" total quality management tools, such as statistical process control, needed for continuous improvement. For example, the Long Island Defense Diversification Project began demonstration activities with team-based training in high-performance workplace skills for members of a designated labor-management committee at each participating firm. Subsequently, broader groups of employees received training in total quality management tools, statistical process control, and management development. The Massachusetts Strategic Skills Program allowed each participating firm to develop its own training curriculum, but encouraged firms to arrange for team-based training in problem-solving, continuous improvement, and teamwork skills. The Hummer Project provided classroom-based training in communication and teamwork skills to workers at AM General and eight of its supplier firms. This project also provided applied skills training in process simplification by involving workers in analyzing the functions within their own division and helping to devise a reorganization plan that increased the use of team processes.

In a few projects, basic skills instruction was included within the training plans for individual firms as needed, based on an assessment of the skills levels of the workforce. For example, within the Massachusetts Strategic Skills Program, Warren Pumps identified a need for core skills training in basic shop math and advanced math after conducting a detailed pre-training assessment of workers' skills. Managers and union representatives decided that the core skills training should be accomplished prior to the rest of the workplace skills training to lay a proper foundation for the TQM training that was to follow, particularly in the area of problem-solving tools. The Minnesota Project encouraged workers interested in enhancing their basic skills to attend "off-hours" classes in reading, math, and computer literacy. A twelve-hour introduction to computer literacy in the workplace provided during paid working hours was successful in encouraging a number of at-risk assemblers at Alliant Techsystems to volunteer for the off-hours classes in spread-sheets and word processing.

A number of firms participating in the dislocation aversion projects were interested in providing training in specific technical skills to their workers. Project administrators were sometimes reluctant to support this training with demonstration funds, because they viewed technical skills training as less clearly linked to defense conversion goals than training in high-performance workplace skills. Ultimately, however, a number of projects evolved a service mix that balanced training in specific technical skills with training in high-performance workplace skills. For example, the New York Defense Diversification Project allowed each participating firm to use demonstration funds for a small amount of customized technical skills training as an incentive to get firms to participate in the HPWO-oriented training curriculum. In the second phase of the Massachusetts Strategic Skills Program, this project broadened the mix of training it sponsored to include technical training. For example, one manufacturing firm participating in the second phase of the SSP provided workers with training in quality improvement, but also provided courses on such topics as blueprint reading, cutting tool technology, computerized numerical control turning technology, and mechanical seal installation. A number of projects also identified the need for training to support the development of marketing and customer service skills if the company was going to be able to compete in commercial markets.

The intensity and cost of training provided to individual firms varied widely within and across the DCA projects. The projects serving multiple firms often provided relatively modest amounts of funds (e.g. $20,000 to $40,000) to support training at any given firm. At the other extreme were the projects offering more costly and more intensive services to a smaller number of firms. For example, Sargent Controls in Pima County, Arizona received over $200,000 in training support. Both larger and smaller firms usually contributed substantial resources of their own to support the costs of training, either for the purchase of additional training or for the cost of wages paid to workers attending training.

SUPPORT FOR WORKFORCE RESTRUCTURING

Although all the dislocation aversion demonstration projects were designed to help defense-dependent firms change the way they did business to make them more competitive in commercial markets, workforce restructuring received special emphasis in some projects as an explicit part of the planned demonstration activities and as the culmination of the preceding phases. Some of the projects and firms that planned major reorganizations of the workplace created new commercial divisions separate from their defense operations (e.g., Lau Technologies in the Massachusetts Strategic Skills

Program and AM General in the Hummer Project). Other firms continued to operate integrated defense and commercial operations, but transformed the structure and work processes used throughout the entire firm (e.g., H.R. Textron in the IAM Project). The Hummer Project and the MATT Project had the most formal arrangements for using demonstration funds to support workforce restructuring. The Hummer Project paid for the services of a management consultant who conducted a detailed assessment of the functioning of each AM General division and worked with the company to implement "new work systems" by developing new job classifications and teamwork processes for each division. The MATT Project encouraged participating firms to arrange for a consultant to help them implement "management activity-based costing," which included high performance workplace practices as well as specific cost accounting procedures.

Other projects expected firms to implement restructured workplaces by drawing on the skills of their internal management teams or by purchasing consultant services with their own funds. In some projects project staff encouraged firms to use the "trainers" that had provided formal training in HPWO and TQM skills to help support the implementation of these skills in transformed workplaces. For example, both the Long Island Defense Diversification Project and the Massachusetts Strategic Skills Program encouraged firms to create on-going work unit teams or ad hoc project teams during training as a way to provide applied practice for new workplace skills and as a way to help the participating firms implement planned organizational changes.

SERVICES IN SUPPLEMENTARY PROJECTS

The activities that received public funding support in the supplementary projects tended to be narrower in range than for the DCA projects and did not always include training. For example, the TRP grants to Chandler Evans and Bath Iron Works were used to assist these firms in developing new commercial products and bringing them to market. Other funding sources (primarily the companies' own funds) were used to support ambitious workforce retraining efforts at these firms. In the two DDP projects in the Southern Tier Region of New York State, the federal funding from the Title III National Reserve Account, awarded under DDP rules, provided support only for workforce retraining, even though these firms might also have benefited from support in developing strategic plans for conversion prior to training.

The workforce training that took place in the supplementary projects displayed a mix of training in HPWO and technical skills that was similar to the mix in many of the DCA projects. However, the training initiatives that were carried out by the supplementary projects differed in some important ways from the DCA projects. Because of the larger size of the majority of these firms and the higher level of the public funding they received, the scope of the activities carried out at the participating firms tended to be much more ambitious and much more expensive than the services provided to the DCA projects.

Despite the differences in the range and scope of services between the supplementary projects and DCA projects, there was remarkable convergence between the two groups of projects in terms of the findings about how to support the conversion process for at-risk defense-dependent firms. These findings are described in Chapter III. In the remainder of this chapter, we discuss the extent to which the dislocation aversion projects achieved their desired outcomes.

OUTCOMES

The dislocation aversion demonstrations and supplementary projects attempted to break new ground by developing public-private partnerships to avert layoffs by firms facing the loss of their traditional markets as a result of reductions in defense spending. Attempting to turn around defense-dependent firms that are not prepared to compete in the commercial marketplace is a formidable task. Given the funding constraints of the DCA demonstration and the relatively limited timeframe of the demonstration grants to firms, it was even more difficult. Taking into account the challenges they faced, both the DCA and supplementary projects exhibited encouraging results.

WORK-UNIT PERFORMANCE

Anecdotal evidence suggests that demonstration services were associated with substantial improvements in work-unit performance in a number of the participating firms. For example, intermediate outcomes in the "servo valve assembly division" at H.R. Textron in the IAM Project indicated that workers in this unit increased their productivity by 20% after completing HPWO and just-in-time training. Prior to training, this division took five days to complete one valve using a batched order system. After training, valves were completed the same day they were ordered, which reduced backlogs of stock. The division also eliminated a second shift without laying off workers, saving the company $65,000 in utilities expenses.

A firm participating in the Massachusetts Strategic Skills Program, Barry Controls, markedly reduced its backlog of overdue orders (from 3 months to between two days and one week) after workers completed training in TQM and HPWO skills. Both firms noted that workers' morale had increased, as a result both of understanding how their jobs affected the firm as a whole and of rallying around company-wide goals of improved performance. AM General also documented decreases in defects and costs and increases in productivity over the demonstration period.

Among the supplementary projects, Bath Iron Works and Chandler Evans hoped to improve company performance as a result of restructured work process and job classifications, which removed artificial work barriers and reduced down-time by individual workers, but could not offer quantified measures of progress in these areas at the time of the evaluation visit.

WORKFORCE RETENTION

For projects that provided relevant data, participating firms generally retained a stable workforce throughout the period of active project participation. Data provided for individual companies participating in the multi-firm projects showed that employment in a majority of participating companies either grew somewhat, remained stable, or declined slightly; only a few firms lost significant numbers of employees during the demonstration period. For example, of the 20 firms that participated in the Strategic Skills Program in Massachusetts, 18 avoided layoffs during the period of the training grant. One firm was closed by its parent company and merged with a sister company in New York State. Another firm was forced to lay off about 18 workers during the training period due to a financial crisis.

A more meaningful measure of whether the demonstration efforts succeeded in preventing layoffs in the participating firms would be whether participating firms retained workers two and three years after participating in the demonstration. Unfortunately, projects were not designed to track performance at participating firms beyond the period of formal project participation.

Perhaps the strongest evidence of short-term layoff aversion due to the success of a company's conversion efforts occurred in the case of AM General. As a result of successful marketing of the commercial "Hummer," AM General was able to avoid a planned layoff of 400 workers by transferring workers from the traditional defense division (producing Humvees for the Department of Defense) to jobs in the commercial Hummer division and jobs in a new division rebuilding Army trucks. In contrast, Alliant Techsystems, which was not interested in pursuing entry into commercial markets, laid off over 100 assembly workers during the demonstration period.

Although the supplementary projects were selected to represent "successful' approaches to dislocation aversion, their outcomes are not dramatically different from those of the DCA projects. Among the supplementary projects, efforts to support diversification coincided with modest workforce expansion in two firms (Amphenol Aerospace and Lockheed-Martin Control Systems). Amphenol Aerospace already had 40% commercial sales at the beginning of the demonstration period and did not develop a comprehensive plan for new penetration of commercial markets. During 1995, Amphenol developed enough new sales to hire 150 new workers for its integrated defense and commercial facility. Lockheed-Martin hired 35 new employees with non-defense backgrounds to start-up its commercial division, rather than transferring workers from the defense division. However, as the commercial division expands, the company hopes to be able to transfer workers from the defense to the commercial division.

One issue that is likely to arise in a number of companies that succeed in transferring workers from defense to commercial production is the need for a lower pay scale for production for new markets. In AM General, the workers in the truck rebuilding division are paid at a lower hourly rate than the workers in the traditional defense division. Similarly, the workers hired for Lockheed-Martin's commercial "factory within a factory" are paid at a lower hourly rate than workers in its defense facility.

In the case of Bath Iron Works, the company agreed to retain all jobs for hourly workers for a three-year period in exchange for a union agreement to dramatically restructure job classifications and broaden workers' skills . At the end of this time, the company needs to have developed a pipeline of orders for the production of new commercial ships in order to be able to retain the current workforce. Vision 2020, in which ESL attempted to spin off new commercial ventures, succeeded in launching one new enterprise that grew to about 60 employees (30 new and 30 previous ESL employees), but found itself unable to sustain its business incubator effort after suffering substantial losses in its defense business and being forced to begin worker layoffs in its defense business.

SALES STABILIZATION AND REDUCED DEFENSE DEPENDENCY

It was generally too early to determine whether participating firms had benefitted from participation in the DCA projects in terms of overall sales and the proportion of commercial to defense sales. Current evidence suggests that a number of the companies that participated in the demonstration succeeded in identifying commercial market niches that have the potential to replace lost defense sales. Whether they will be able to grow and stabilize sales in these markets was not always evident during the demonstration period. Anecdotal evidence suggests that a majority of the participating firms will stabilize or increase their total sales. Some firms will accomplish this by increasing both their defense and commercial sales, while other firms will increase commercial sales to replace declining defense sales. It appears that a minority of the firms that participated in the DCA projects will suffer overall declines in total sales due to an inability to realize hoped-for sales in commercial markets or defense-related sales that decline faster than commercial sales grow.

Some participating firms did not perceive a strong relationship between sales stabilization (at least in the short-run) and reduced defense dependency. Although many of them wanted to move into commercial markets in the long run, they also felt compelled to continue to pursue defense-related sales and often viewed defense markets as their core markets over both the long term and the short term. Examples include:

- Herndon, a family owned business that participated in the MATT project in St. Louis, manufactured precision fasteners for the aerospace industry, specifically McDonnell-Douglas. After conducting a self-assessment and implementing workplace activity-based costing as part of demonstration-supported services, this firm found itself in the midst of massive growth: the firm's business was expected to grow by a factor of about four over a 1.5-year period, due to an expansion of its work for McDonnell-Douglas. However this growth was due to a continued heavy dose of defense-related work, estimated at 70% of the total revenues of the firm.

- Systems Engineering Associates Corporation, a company with about 80 engineers and computer scientists, participated in the Rhode Island Workforce Protection Program. Although this firm identified a number of diversification options, including providing computer-based services to the medical services field, they continued to pursue defense contracts with substantial success. Between 1993 and 1995, the company tripled in size as a result of new defense-related contracts. As a result, the workers who were interested in pursuing commercial applications did not have enough time to complete the needed market research for these new directions. At the conclusion of the demonstration period, the company had received one small contract to develop software for a children's health network, but progress in exploiting opportunities in this area was slower than expected.

However, other firms participating in the demonstration made substantial progress in increasing their commercial sales both in absolute terms and as a proportion of total sales. Examples include:

- Electronic Hardware Corporation, a manufacturer of plastic knobs for military and commercial applications with 90 employees, participated in the Long Island Defense Diversification Project. This firm increased its total sales from $5.5 million to $6.5 million in one year, and increased commercial sales from 40% to 50% of total sales. However these changes happened largely prior to the delivery of DCA-funded training to the firm's workers. Worker participation in training in communications, sales, and manufacturing skills during the demonstration were expected to support the progress already made by this firm.

- Microwave Power Devices, another firm participating in the Long Island Defense Diversification Project, developed new commercial products and went from being 80% defense-dependent to 20% defense-dependent during a two-year period. Like Electronic Hardware Corporation, this firm was already well on the road to conversion by the time it entered the demonstration. Participation in the demonstration, in which workers received HPWO training and computer training, was expected to support the changes already underway at this firm.

- Production Products, a manufacturer of textile products with about 80 employees when it began participating in the MATT project, was 90% defense-dependent at the beginning of the demonstration period and was interested in exploring composite manufacturing as an opportunity for developing commercial products. After conducting a self-evaluation and upgrading its cost accounting practices, this firm continued to explore carbon filament wrapping technologies, formed a carbon fiber filament division, and signed a development contract with a major construction engineering company to develop bridge components. The firm also developed two additional applications for carbon filament technology: filament tubes for MRI equipment and carbon fiber utility poles. Participation in the MATT project supported the implementation of this firm's pre-existing ideas for commercialization. Layoffs were avoided and the firm expected to expand to 125 to 150 employees by the end of 1995.

As pointed out by the above examples, participation in the DCA projects was only one factor among many that influenced the ability of the participating firms to accomplish their strategic goals for survival, growth, and diversification into commercial markets. The fact that the majority of the participating firms appeared to be successfully pursuing stability and growth, if not always reductions in defense dependency, is an indication that the projects selected participants wisely and that project participation supported change efforts already underway within the participating firms. In many cases, respondents from the participating firms indicated that they would have proceeded with their plans to convert to commercial markets even if they had not had access to the DCA demonstration funding. However, they said, progress would have been much slower, and training would not have reached as many workers as they were able to reach with assistance from the demonstration. Other firms indicated that, without participation in the DCA demonstration, they would not have been able to plan successfully for conversion to commercial markets.

In Chapter III, we describe what worked well and what worked less well in the dislocation aversion project's attempts to accomplish their desired objectives.

CHAPTER III

KEY FINDINGS

III. KEY FINDINGS

INTRODUCTION

In this chapter, we summarize key findings based on the experiences of the Defense Conversion Adjustment (DCA) and supplementary projects as they planned and implemented services to firms affected by the cutbacks in defense procurements. Findings address the following topics: (1) effective project goals and objectives; (2) recruitment and selection of appropriate firms for participation; (3) development of appropriate roles and responsibilities for public and private sector partners; and (4) design and delivery of responsive services. We conclude the chapter with a discussion of strategies that are likely to result in the successful design and implementation of defense conversion activities.

PROJECT GOALS AND OBJECTIVES

In its announcement of funding availability for the DCA demonstration grants, the Department of Labor (DOL) indicated its interest in supporting retraining efforts to help avert layoffs that would otherwise have occurred in response to reduced defense spending. Emphasis was placed on early intervention services intended to prepare at-risk defense workers for the new jobs that would be created as their employers reorganized operations under a conversion or diversification plan. Hence, federal policymakers assumed: (1) that companies selected to receive grants under this program would have a plan for conversion/diversification; and (2) that retraining would be used to prepare workers for new jobs created as a result of commercial sales growth within these companies. The federal announcement also emphasized the importance of identifying measurable goals and outcomes that would aid in determining project effectiveness. In this section, we describe how the projects we studied responded to these federally defined goals and what we learned from their experiences in developing and measuring project- and firm-level goals and objectives.

Achieving Agreement About Conversion Goals

Although DOL was clear about its goal of assisting firms to stabilize or increase their employment by building their capacity to compete in commercial markets, some confusion arose over the relative priority of the goals of employment retention versus defense conversion. At times this created tension between the public sector partners, which most often emphasized defense conversion as a primary project goal, and the participating firms, which often sought to use training to improve performance in both defense and non-defense markets. In a few projects, the public administrators themselves gave less emphasis to defense conversion than they did to the stabilization of employment through the transformation of firms into high performance work organizations (HPWOs). As the projects moved into the implementation stage, all partners struggled with identifying goals that were consistent with the DOL goals for the demonstration yet made sense to the participating firms whose primary goal was to survive and prosper.

Finding #1: It was important to ensure that participating firms were committed to the goal of *market diversification* and were making a serious effort to diversify as a result of participation in the project. Commitment to becoming an HPWO or some similar goal was not sufficient.

Although there was some overlap of federal-, project-, and firm-level goals in all the projects studied, firms were usually motivated by the desire to improve their competitiveness in both commercial and defense markets, while projects tried to ensure that demonstration funds were used to support diversification goals. Several projects justified using the demonstration funding to help overhaul both their defense and commercial operations by pointing out that, as part of the layoff aversion strategy, workers on the defense side of their operations would need to be ready to be transferred to commercial ventures in the future, if defense operations shrank and commercial operations continued to expand.

Goal agreement was the most problematic in cases where companies viewed defense contracting as their core business for the foreseeable future and saw the potential for continuation or expansion of defense sales. In several instances, participating firms did not appear to be fully committed to diversification as their primary goal. For example, a representative of the New York

Department of Labor commented that she felt that Amphenol Aerospace, which participated in a supplementary Defense Diversification Project, was at least as motivated by a desire to get "leaner and more competitive in defense markets" as by a desire to expand its commercial sales. Goal agreement was also problematic during much of the first phase of the Project for the Conversion of Sargent Controls, because the top managers at Sargent Controls were not convinced that the firm would have to enter commercial markets to survive.

Several firms expressed agreement about conversion goals, but undertook only half-hearted efforts to secure non-defense sales. Staff in these companies often were spread too thin to pursue both defense and commercial markets simultaneously, even when they had goals for diversification. For example, Systems Resource Management (SRM) a small computer-assisted graphics design firm that participated in the Rhode Island Workforce Protection Program, had seen its defense sales decline and was interested in discovering commercial applications for its skills. However, after receiving some new defense contracts, existing staff were too fully committed to pursue non-defense work. Accurate Products, a small precision machine shop served during the second phase of the Sargent Controls project, also found that staff were too busy with existing work, much of which was defense-related, to carry out the market assessments that they needed to perform to proceed with plans for expansion into new markets.

Using Project Services as Strategic Tools to Support Conversion Goals

The original announcement for the demonstration assumed that defense firms would have strategic plans for conversion in place. Project activities were intended to help companies implement these plans to realize successes in the commercial marketplace. Workforce training was intended to support a linked set of action steps to further the implementation of the conversion plan. Elements of the plan to transform defense-dependent companies often included the introduction of new products, changes in production technologies and processes, and the restructuring of jobs and work relationships.

Finding #2: Projects were most successful when participating firms treated project services, including retraining, as strategic tools to further corporate goals and objectives. Training was most effective as a tool for change when it was linked to planned workplace restructuring as well as to a strategic conversion plan.

Because firms participating in the dislocation aversion projects were at different points in the conversion/diversification process, they used training in different ways. Projects that assisted companies that were early in the conversion planning process found that training worked best if it focused on what the company needed to know to develop a plan for conversion and to prepare for success in commercial markets. For example, at Guill Tool and Engineering in the Rhode Island Workforce Protection Program, training was used to give engineering staff the skills they needed to refine its proprietary product for commercial applications. Training in the Long Island Defense Diversification Project was designed to support the operation of labor-management teams that were intended to be change agents to transform their firms into high performance work organizations. In the Management Assistance and Technology Transfer Project training was used to help management staff learn skills such as activity-based costing and marketing that would be essential for success in commercial markets. In these firms, training was viewed as an essential step in preparing the company to pursue diversification goals.

Projects assisting firms that were ready to implement widespread workplace reorganizations to enhance production for commercial markets found that training could support these changes by addressing skills needed for concurrent engineering, just-in-time (JIT) delivery systems, process simplification, total quality management, and high performance workplace skills. For example, H.R. Textron, a firm participating in the International Association of Machinists and Aerospace Workers (IAM) DCA project, used HPWO and just-in-time training to support workers in the redesign of work stations and work processes. Even before physical changes to enhance production had been completed, this firm found that productivity of the division increased by 20%. Moduform, a firm in the Massachusetts Strategic Skills Program, found that production time in the wood-working department increased from 70% to 79% of all available production time, after workers in this department participated in "set-up reduction" training. For these firms, training was used to further transformations of work processes designed to improve competitiveness in commercial markets.

Training was least effective in bringing about desired outcomes when companies did not have a plan for using the new skills in the workplace in a way that would support a strategic plan for conversion. Alliant TechSystems in the Minnesota Defense Conversion Adjustment Project provided intensive training for machinists, yet did not have a clear strategy for using these new skills in the workplace or using training to assist the firm in stabilizing its sales. At Flex-Key Corporation, in the Massachusetts Strategic Skills Program, the fact that workers were not assigned to teams during or after HPWO training was a sign that the company had not linked training to the accomplishment of its strategic goals for the development of a commercial product. A short time later, the parent company closed this firm and gave its new commercial product to a sister firm in the state of New York.

Setting Realistic Time-Frames

The transformation from defense to commercial markets is usually a long-term process. Depending on the changes that need to be made before a firm is ready to compete in commercial markets, conversion can require a significant investment of time and resources before a company begins to see a return on its investment. The DCA and supplementary projects had specific time-frames within which grant activities were supposed to be scheduled and completed. Some administrative entities expected that firms would be able to make measurable progress toward achieving their conversion goals and objectives within the demonstration period. Projects and firms experienced difficulties in achieving their expected goals within the demonstration time-frames because of start-up delays (e.g., delays recruiting firms, designing training, and selecting training providers) and because the different steps in the conversion process took longer than expected.

Finding #3: Projects were able to achieve their goals only if they recognized that it would not be possible to assist participating firms with the entire conversion planning and implementation process within an 18-month demonstration period.

The problem of demonstration time-frames that were too short for the completion of conversion objectives was exacerbated in those projects that had not selected firms and service providers prior to the award of the demonstration grant. A number of projects severely underestimated the amount of time that would be needed to recruit and select firms for participation (e.g., the IAM Project, the Massachusetts Strategic Skills Program, and the Rhode Island Workforce Protection Program, among others.) Selecting training providers and developing detailed training plans also took longer than expected in a number of projects. In the Long Island Defense Diversification Project and the Management Training and Technology Transfer Project, initial assessment and curriculum development activities took substantially longer than expected, leaving less time to complete other project activities. As a result, several of these projects used the additional twelve-month option year funding period to continue working with the initial group of firms.

Some projects, most notably the Massachusetts Strategic Skills Program, designed their goals and objectives from the outset to fit the limited time-frame of the demonstrations by recruiting only firms that already had a strategic plan for conversion and were ready to begin workforce training to support that plan. Strategic Skills Program staff felt, however, that this approach prevented some companies that would have benefited from the demonstration from applying and wished there had been time in the demonstration time-frame to allow for assistance with strategic planning as well as training support.

The projects that recruited firms with less well-developed conversion plans learned to adjust their expectations and service designs to meet the reality of slowly evolving change within many of the firms they worked with. Firms also learned to set more realistic goals for themselves. Where participating firms did not have a strategic plan to begin with, there was little hope that a firm could successfully reorganize itself within the demonstration period. It was well into the Sargent Controls Project's option year phase before the firm began to see the necessity of a strategic conversion plan and began to tie training to such a plan. At the end of 18 months, many firms were, like Sargent, still in the strategic planning phase of conversion. Others had started to reorganize their workplaces, but had little hard evidence about the impact of training and reorganization on the achievement of corporate goals.

Firm Resources Needed to Support Conversion Goals

Most projects and firms soon realized that the funds available through the demonstration would only begin to move the firms from defense-dependency to commercial success. To make the conversion efforts successful, firms had to make substantial investments of their own resources and resolve potential conflicts between resources (staff time and money) devoted to training and resources devoted to meet current production demands. They also had to consider how to sustain the reorganization/retraining effort after the grant was over.

Finding #4: To achieve their conversion objectives, firms had to be willing to invest substantial resources of their own to ensure that retraining and reorganization efforts would be completed as planned during the demonstration period and would be continued beyond the end of the demonstration.

In some projects, the funding available to each firm was rather modest and possibly not enough, on its own, to have a significant impact. For example, among the 42 firms assisted in the Massachusetts Strategic Skills Program, the Rhode Island Workforce Protection Program, and the second phase of the Sargent Controls Project, DCA-funded training grants averaged $20,000 to $40,000 per firm. In most cases, the participating firms more than matched these sums with additional expenditures on training or wages paid to workers while they were in training. Even where substantial training funds were provided to a single firm, as in the first phase of the Sargent Controls Project or in the Hummer Project, the participating firms invested large amounts of money in wages paid to workers attending training as well as in investments to upgrade production technology and implement workforce restructuring.

Opportunities to achieve overall project goals were sometimes limited by the lack of available funding. The IAM Project had very ambitious goals for training a network of 30 suppliers of H.R. Textron by linking the DCA funding to an additional funding stream. When this funding did not materialize, plans had to be scaled back. In Vision 2020, ESL was forced to abandon its new ventures incubator, even though it was successful in generating eighteen new business ideas and bringing nine of these to launch stage, because it was not able to provide the start-up capital that would be needed to continue these efforts.

Some firms made provisions for continuing training efforts in-house after the end of the demonstration period by developing train-the-trainer materials and using demonstration funds to train in-house trainers. For example, Lau Technologies, in the Massachusetts Strategic Skills Program, invested in a variety of train-the-trainer and facilitation skills training for supervisors and managers, to ensure that the company would have the capacity to continue to support the change process after the end of formal training. At Bath Iron Works, skilled craft workers within the company were trained as trainers to teach production workers broader skills sets to support a greatly simplified job classification system.

Methods Used to Reach As Many Firms As Possible

In most of the areas served by the DCA projects, the firms selected for participation represented only a small fraction of all firms impacted by reductions in defense contracting. Most of the project administrators wanted to use the DCA demonstration to develop relevant expertise and institutionalize an ongoing capacity to serve additional firms. Sometimes this was pursued by trying to ensure that the project itself would continue to exist after the demonstration period to serve additional firms. In other cases, project staff worked to develop an increased capacity within local educational institutions to respond to the ongoing business service and workforce retraining needs of additional firms. To achieve economies of scale within the demonstration, projects also experimented with grouping firms with common interests and training needs for the delivery of training.

Finding #5: To achieve economies of scale in training design and delivery, several projects grouped firms with common training needs. To reach additional firms after the end of the demonstration period, projects also found it useful to institutionalize the local capacity to help firms respond to changes in their markets.

Training networks were used by the Sargent Controls Project and the Massachusetts Strategic Skills Program as a way to achieve economies of scale in the design and delivery of training. By grouping firms for the delivery of training, these projects succeeded in dramatically reducing the costs of training to individual firms. However, they also found that it was important to work individually with the firms to ensure that the generic training would be used to support their specific reorganization and conversion goals.

Projects tested two different strategies to build an ongoing capacity to support at-risk firms: (1) trying to plan for continued activities by the demonstration project or one of its project partners to assist at-risk firms after the end of the demonstration period, and (2) encouraging local educational institutions to develop an ongoing capacity to serve restructuring firms.

Several projects continued to work with at-risk firms after the conclusion of the DCA demonstration project. The Massachusetts Industrial Services Program in which the Strategic Skills Program was housed aggressively pursued additional DOL and state funds to support continued training grants to large and small firms attempting to adjust to changing markets. As a result it was able to create an Incumbent Worker Training Unit as a permanent division within this agency. Additional services were also being developed for delivery to interested firms on a fee-for-service basis. The Arizona Council for Economic Conversion secured additional funding from the Office of Economic Adjustment within the Department of Defense to continue its efforts with defense-dependent firms. This agency has also been instrumental in efforts to lobby the state government for the creation of an ongoing state appropriation to assist defense-dependent firms with commercialization efforts.

The Long Island Defense Diversification Program and the California Supplier Improvement Program (CalSIP) demonstrated the benefits of developing an ongoing capacity among area educational institutions to serve firms undergoing change. Each of these projects developed a core curriculum from which a number of educational institutions could draw in serving individual firms. These projects achieved economies of scale in the design of training and succeeded in creating an ongoing capacity to assist firms in adjusting to industry restructuring.

Accountability for Outcomes

In the private sector, professional trainers and human resources staff are often faced with justifying the financial expenditures that companies make in employee training. Should it be seen as an investment or as an expense? What benefits accrue from investments in training? Demonstration projects faced these same issues, with the increased pressure to be accountable for the return on the investment of public funds. Without clear, measurable goals, it proved difficult for most projects to ascertain what outcomes could be attributed to the demonstration investment.

Finding #6: Projects, in most cases, put relatively little time or energy into helping firms develop specific, quantifiable objectives for their participation in the project. This made it extremely difficult to measure progress toward achieving objectives or to measure the effectiveness and benefits of training. In addition, firms that collected and disseminated information about progress on desired measures found that workers became more motivated to support workplace changes.

One of the weakest aspects of the dislocation aversion projects was their limited emphasis on documenting intermediate and long-term outcomes at both the firm and the project levels. Even when projects and companies stated measurable objectives, they rarely collected the data to support them. When outcome data were collected, they were rarely comparable across firms within a given project, far less across projects. Most projects and firms were content to limit their measurements to providing numbers related to participants served, courses offered, and sometimes, increases in total sales. In many cases, these goals were phrased in such vague terms that any measurement would demonstrate progress.

Several barriers made it difficult for projects to account for outcomes at the firm level. One of these barriers was the reluctance by a number of participating firms to release what they viewed as confidential information about their corporate performance. Another barrier was that formal project relationships with firms often lasted only during the period of training delivery, although meaningful information about firm outcomes was available only over an extended period after the conclusion of training.

Attempts to assess the impact of training were also complicated by the fact that multiple factors often affected bottom-line success. For example, as part of a supplementary project, Lockheed-Martin Control Systems used grant funds to provide training to equip workers with the skills necessary for success in the reorganization of its work process. However, it simultaneously embarked on a bold marketing program for its commercial control systems for locomotives. Was it marketing or training or a combination of the two that helped the firm achieve increased commercial sales? The Sargent Controls Project touted the shift in Sargent Controls' sales from 90% defense to 50% defense as an indication that the demonstration had been successful. Yet most of the increases in this firm's commercial sales were achieved through the purchase of a profitable commercial bearings manufacturer. Although this purchase was an indication of the fact that management was finally convinced of the necessity to commit to commercialization, did the training provided to Sargent Controls workers by the grant contribute to the firm's success?

A few projects placed substantial emphasis on tracking and measuring progress toward conversion goals as a result of demonstration activities by tracking process measures of company performance using indicators such as scrap rate, on-time deliveries, and error rates, in addition to cost-of-quality measures and bottom-line sales and profitability measures. These projects and firms, including the Massachusetts Strategic Skills Program, the Hummer Project, and H.R. Textron in the IAM demonstration, found that firms that set measurable performance objectives enjoyed greater buy-in from workers and increased worker commitment to company goals because workers could start to see how their individual actions affected the achievement of company-wide performance goals. For example, Barry Controls, a firm served by the Strategic Skills Program, noticed that workers were enthusiastic about trying to meet an ambitious goal of 95% inventory accuracy and 95% on-time shipments. At the midpoint in the demonstration, workers in the H.R. Textron Servo Controls Division were also enthusiastic about increases in their productivity and reductions in their order-to-shipping time as a result of training.

RECRUITMENT AND SELECTION OF FIRMS

As described in Chapter II, most of the DCA projects recruited and served small and moderate-sized second- and third-tier defense subcontractors and suppliers; exceptions were the Hummer Project and the Minnesota Defense Conversion Adjustment Demonstration, which served prime contractors. Most of the supplementary projects served large first- and second-tier defense firms (e.g., Amphenol Aerospace, Lockheed-Martin Control Systems, Bath Iron Works, and Chandler Evans). Although actual recruitment and selection procedures varied widely across projects, depending on the number and types of firms targeted, there was widespread agreement on several key issues related to firm recruitment and selection, including the importance of assessing whether the firm was committed to change, the importance of ensuring whether there were sufficient public and private resources to complete the change process successfully, and the importance of a good match between project services and firm needs.

Effective Recruitment Procedures

Projects used a wide variety of procedures to recruit firms interested in participating in public-private projects to support defense conversion efforts. Projects serving multiple firms often started with systematic outreach by telephone and/or mail to all local firms identified as defense contractors or suppliers. Frequently, however, these broad recruitment efforts resulted in low rates of response from the targeted firms. Project experiences suggest that the demonstration projects were often hampered by an inability to identify second- and third-tier defense subcontractors and suppliers, and, once relevant firms were identified, by the lack of a demonstrated project track record and limited project visibility within the business community. To overcome recruitment difficulties, projects had to find a way to reach managers responsible for making decisions about the futures of their defense-dependent companies and convince them of the benefits of participating in a publicly supported training effort.

Finding #7: **Recruitment efforts were most effective if they (a) included personalized face-to-face or telephone contacts between experienced project staff and top-level corporate managers, (b) built on existing relationships between private firms**

and public sector agencies, and (c) emphasized how participation could help firms achieve their strategic objectives.

Several projects benefited from face-to-face recruitment efforts conducted by senior project staff. Although time consuming, these efforts enabled the projects to gain access to key company executives. After initial letters to local defense contractors and suppliers in the St. Louis area resulted in a low rate of firm response, the project director of the Management Assistance and Technology Transfer Program conducted telephone calls and follow-up site visits to meet with senior managers at potential participant firms. The initial site visits were used to assess the companies' appropriateness for the project as well as to provide company managers with information about the services that could be made available to the firms and how the firms might benefit from participation in the project. Personalized face-to-face and telephone contacts between project staff and interested firms also became part of the recruitment and selection process for the second phase of operations of the Massachusetts Strategic Skills Program and the Sargent Controls Project.

In contrast, the San Diego Defense Conversion Adjustment Demonstration invited defense-dependent firms to attend "defense conversion roundtable" discussions to learn about opportunities to transfer defense technologies to commercial applications. Perhaps because this activity was oriented to groups of firms, rather than involving one-on-one consultations, few of the firms that attended the roundtables requested additional assistance with defense conversion from this project.

In several projects, recruits were obtained from the ranks of firms that had already had some contact with other public business assistance services available from the project administrator or its affiliated agencies. For example, all of the firms that participated in the Long Island Defense Diversification Program had previously participated either in an Office for Economic Adjustment (OEA)-funded defense diversification initiative that preceded the DCA demonstration or in a state-funded business assessment and training program. To benefit from the visibility of a better-known and well-regarded public sector business assistance program, the Rhode Island Workforce Protection Program decided to issue its second round announcement of funding availability jointly with the state's Competitiveness Improvement Program (CIP). This demonstration also received direct referrals of three firms that had applied to CIP but were found to be eligible for the DCA demonstration.

In projects that targeted a single firm, the initiative for participation in a joint public-private partnership often originated with the firms themselves or with labor-management teams within these firms that recognized the need to restructure to compete in commercial markets. For example, the projects involving AM General, Bath Iron Works, and Chandler Evans grew out of a recognition by organized labor and company managers in these companies that collaborative efforts to restructure these firms would benefit both workers and corporate shareholders.

Importance of the Firm's Commitment to Change

After recruiting interested firms, projects had to decide what criteria to apply during screening and selection. Because the dislocation aversion projects were designed to help firms use training as a strategic tool to support a corporate change process, they found that it was essential to select firms that had a commitment to change. Although they agreed on this general finding, projects varied in how they assessed the extent of corporate commitment, what types of changes the firms had to be committed to at the outset of the project, and what range of corporate changes the projects were prepared to support.

Finding #8: In selecting firms for participation, projects found it critical to assess whether a firm was committed to making the fundamental changes necessary for successful conversion.

The assessment of company commitment to conversion was most difficult for projects that targeted or accepted firms that were early in the conversion planning process (e.g., the Management Assistance and Technology Transfer Program (MATT), the IAM Defense Conversion Adjustment Demonstration, and the Sargent Controls Project). These projects tried to reach companies that knew they were about to be seriously impacted by a loss of defense sales and needed assistance developing a viable conversion plan. Initially, some projects accepted any firm that indicated interest in participating, as long as they were expecting reductions in defense-related sales. However, projects found that, without an initial commitment to conversion, senior managers were sometimes reluctant to implement diversification and reorganization plans even though it had been established that defense cutbacks would negatively impact the firm. Some of these managers had second thoughts about their planned conversion efforts even after substantial investments had been made in implementing workforce reorganization and retraining plans (e.g., H.R. Textron in the IAM Project, Sargent Controls, and Seiler Instruments in the MATT project). After worrying that the public sector investments to support conversion efforts in these firms would be wasted, projects learned that it was important to ensure that top managers were committed to conversion before substantial public funds were invested on their behalf.

The stated lack of interest in conversion by Alliant TechSystems in the Minnesota Defense Conversion Adjustment Demonstration made this firm an anomaly among the firms participating in the dislocation aversion projects. In selecting this firm, project planners were convinced that the company was committed to change because it was planning to invest substantial resources of its own in workforce training. However staff indicated that they had overestimated Alliant TechSystems' commitment to using training as a strategy for corporate change, which resulted in difficulties in completing this project and furthering its objectives.

Other projects, such as the Massachusetts Strategic Skills Program, the Hummer Project with AM General, and the Bath Iron Works Technology Reinvestment Project, selected firms for participation based on the fact that they already had a strategy for conversion and a commitment to implementing this plan. Although these companies did not all have detailed blueprints for commercialization before they began project participation, they already knew what commercial product they wanted to sell and what changes they needed to make in their overall operations before they could succeed in commercial markets.

Among projects that recruited firms with a strong commitment to conversion, a strategic plan was only partial evidence of such commitment. Some projects also required evidence that a company had invested or was planning to invest significant resources of its own in the change process (e.g., through purchasing new equipment, reorganizing the workplace, or helping to fund workforce training). A clear written or verbal statement of commitment by top management to the change process was also viewed as essential by some projects (e.g., Massachusetts Strategic Skills Program).

Evidence that worker representatives had been consulted in the development of the strategic plan and were solidly behind the planned effort was also considered important by several projects. Among the projects studied, worker support was evidenced in some projects by the formation of joint management-worker planning committees (e.g., Lockheed-Martin Control Systems, and Moduform, Inc., in the Massachusetts Strategic Skills Program). In other projects, active commitment from formal labor organizations was evidenced by project proposals submitted jointly by companies and their unions (e.g., AM General and Bath Iron Works).

Required Balance Between A Firm's Level of Need and Its Ability to Support the Change Process

The demonstration projects faced a major challenge in selecting firms that could most benefit from their assistance. On the one hand, projects found that it was important to recruit firms that were seriously impacted by the cutbacks in defense spending and would not have the financial or management resources to respond to these cutbacks on their own. On the other hand, projects wanted to ensure that the firms they recruited would have a significant chance of being successful in achieving their defense conversion and employment retention goals. Although projects differed in how they operationalized these criteria, they agreed on the general principles of balancing need and likelihood of success.

Finding #9: Although projects wanted to assist companies that really needed outside support, they found that it was also important to ensure that participating firms had the basic prerequisites for success. Projects tried to avoid the extremes of, on the one hand, helping companies that could accomplish their restructuring and commercialization objectives on their own without public support, and, on the other hand, spending money helping companies that were "too far gone" to save.

To select firms "at risk" of layoffs as a result of defense cutbacks, projects often established eligibility criteria that included a minimum percentage of defense-related sales and expected reductions in defense revenues. The Management Assistance and Technology Transfer Program in St. Louis required firms to have at least 40% defense-related sales to qualify for participation. Other projects set the required level of defense-related sales at lower levels (e.g., 25% in the Rhode Island Workforce Protection Program; 30% or at least $500,000 in the second phase of the Massachusetts Strategic Skills Program).

About half of the projects studied decided that small and moderate-sized defense suppliers with fewer than 500 employees were the firms that needed the most help responding to the cutbacks in defense contracting. These firms were identified as having the fewest internal resources to draw on in restructuring themselves into commercial firms. They often had a limited capacity to conduct strategic planning, lacked marketing and customer service staff, and had little experience developing or providing workforce training. Participation in a public-private partnership for these firms, it was felt, might make the difference between firm survival and closure.

To ensure that the public investment in furthering defense conversion efforts by small and moderate-sized firms was not wasted, projects recommended taking into account during the selection process a firm's ability to support change during and after formal project participation. Specific selection criteria found to be important included:

- **The financial viability of the firm during the planned period of transformation.** Some defense-dependent firms identified by the projects were too troubled to benefit from help. The firms lacked a backlog of sales sufficient to sustain the firm during a lengthy transformation process.

- **The commitment of the firm's board of directors, owner, or parent organization to support the defense-dependent firm during the transformation to a commercially oriented firm.** Regardless of the commitment of a company's managers, projects sometimes found that parent organizations were ready to "pull the plug" on a defense division as soon as it became unprofitable. It was important to ensure that parent organizations, holding companies, and boards of trustees were committed to the strategic plan for conversion.

- **The ability to resolve potential scheduling conflicts between training and production time.** In retrospect, a number of projects identified this as the major implementation barrier faced by participating firms. Unless resolved in a satisfactory way, these conflicts made it difficult to complete training and support company reorganization efforts.

Several projects decided to work intensively with large defense-dependent firms that had ambitious restructuring and retraining goals they could not carry out without public support. Though it was substantially more expensive on a firm-for-firm basis, projects working with larger firms felt justified by the greater number of jobs that could be saved or created if the company was successful in commercial markets. In addition, these firms (e.g., AM General, Bath Iron Works, Amphenol Aerospace) were often among the largest employers in their immediate regions. Helping the firm survive would benefit the regional economy as well as the individual firm. Public investment in these large firms, it was felt, would also benefit from the substantial investment the firms themselves could bring to bear on the change process.

Importance of a Good Match Between Project Services and Firm Needs

Each project had its own expectations about the types of services at-risk defense-dependent firms would need. The array of planned services influenced which firms were considered appropriate for project participation. In some projects, firms were recruited and selected first, and then services were developed to meet their particular needs. However, most often, a general service approach was developed prior to the selection of participating firms.

Finding #10: Projects were most successful if they selected firms that were interested in and appropriate for the services they were planning to provide.

Because of the limited project time-frame, some projects designed services to meet the needs of firms that already had a strategic conversion plan. In recruiting and selecting firms, these projects ensured that firms were ready for training. The Rhode Island Workforce Protection Program and the first phase of the Massachusetts Strategic Skills Program designed their services to meet the needs of firms that already had strategic plans for conversion, knew what types of training they needed to support their strategic plans, and knew where to secure the needed training. Firms were selected to match these projects' expectations of a high level of self-direction by the participating firms in designing and carrying out training.

In contrast, the Long Island Defense Diversification Project, the Hummer Project in South Bend, Indiana, and the Management Assistance and Technology Transfer Program in St. Louis expected that firms would need to participate in a guided needs assessment process before they could identify their reorganization and workforce training needs. Firms were recruited for participation based on their interest in the overall guidance the projects offered in the conversion planning process, as well as by the ability of the projects to help them access expert consultants in the areas of strategic plan development, activity-based cost accounting, manufacturing resource planning, workplace reorganization, training needs assessment, and curriculum design.

Some of the dislocation aversion projects saw training in HPWO skills—including teamwork, communications, leadership and problem-solving skills—as the most important focus of training and organizational transformation for firms interested in becoming competitive in the commercial sector. Because of their predetermined emphasis on HPWO skills, the Long Island Defense Diversification Project and the Massachusetts Strategic Skills Program tried to recruit and select companies that were interested in and could benefit from this type of training. Firms that were more interested in "hard" technical skills training relating to specific occupational categories were not likely to be selected for these projects, even if their training needs were linked to planned conversion efforts. If recruited for these projects, such firms tended to be dissatisfied with the services they received.

ORGANIZATIONAL ROLES AND RELATIONSHIPS

The DCA dislocation aversion demonstration projects attempted to support defense-dependent firms by offering them financial as well as technical assistance with conversion. In doing so, the demonstration projects helped to evolve new roles and relationships between businesses and the public sector and within businesses. Findings from their experiences are summarized below.

NEW RELATIONSHIPS BETWEEN BUSINESSES AND THE PUBLIC SECTOR

Most of the project partners had little previous experience working with firms to avert layoffs. Project staff, most of whom were from the public sector, needed to learn how to work with the business community. Training consultants needed to learn how to work with defense-dependent firms interested in implementing conversion plans. And educational institutions needed to learn how to develop curricula to assist companies in their reorganization efforts. The DCA and supplementary grants provided opportunities for all project partners to learn from each other and develop collaborative approaches to the problems being faced by the firms that volunteered for the program. Projects varied in how they structured the public-private partnership and what services they offered to participating firms, as well as in what they expected from the participating firms. The development of these partnerships was new for project administrators as well as for firms. There were few existing models for projects to refer to in developing an understanding of the roles and responsibilities of each partner.

Balancing the Public and Private Sector Roles

Some projects had a specific vision of how to assist firms and developed a specific menu or sequence of demonstration-funded activities they thought firms should follow (e.g., completion of an assessment of firm and/or worker training needs, followed by the development and implementation of a training plan emphasizing high performance workplace skills). In contrast, some of the projects studied were very flexible about what services they provided to firms. Somewhere between these two approaches were projects that had developed an overall philosophy or vision of how retraining should be used to assist firms in their efforts to diversify and become viable in commercial markets, but which left many of the details of training design and delivery to the discretion of the individual participating firms.

Finding #11: Firms were most comfortable with the public-private partnerships when the projects offered technical assistance and facilitation as needed, but allowed the participating firms to control the details of planning and implementing services. As long as projects provided overall guidance, they were generally able to ensure that public sector goals were being furthered.

The Massachusetts Strategic Skills Program (SSP) exemplified this approach. General SSP guidelines called for participating companies to address total quality management skills and team and interactive skills, as well as to create problem-solving teams as part of the training process. The project also required companies to demonstrate how training would support their individual strategies for diversification and competitiveness in commercial markets. However, participating firms were permitted to develop their own detailed training plans and select their own training providers. By offering overall policy guidance, this project found it could influence the types of training and ensure that training was being used to support the public sector goal of using enhanced worker skills as a strategic tool to improve firm performance in commercial markets. Because companies were able to control the selection of trainers and the details of their own training design, companies generally felt a strong sense of ownership of the process and product of training. Project staff hoped that this would encourage the participating firms to continue similar efforts with their own funds, after the demonstration period was over.

In contrast, projects that promoted or required firms to follow a prescribed sequence of activities found that individual firms sometimes felt that the recommended sequence of services failed to meet their needs. For example, participating firms in the Long Island Defense Diversification Project sometimes felt burdened or overwhelmed by the self-assessment activity called for as the initial activity in the first phase of this project. In addition, the required training needs assessment performed by an outside training consultant was not always felt to be useful by the participating firms. Participating companies in this project felt a relatively low level of "ownership" of some of the demonstration services. In its second phase, the Long Island project abandoned the structured sequence of activities it had followed during the first phase and permitted firms to enter training without going through a standardized self-assessment process.

While firms served under the demonstration appeared to prefer independence in designing their own services, such arrangements made it difficult to ensure that the publicly-funded training would be used in the most effective manner. In the case of the Sargent Controls Project in Pima County, Arizona, the project learned by experience that it needed to be more assertive in ensuring that the public investment in workforce training would be used in support of conversion objectives.

Although the firm served by the first phase of this project ultimately became committed to commercialization, this commitment was not evident early in the project, despite plans for over $200,000 in demonstration funding for workforce training at the firm.

The appropriate balance between public guidance and company involvement was sometimes difficult to specify in advance. For example, the IAM Project and the Massachusetts Strategic Skills Program found that different companies had differing capabilities and that the project needed to be flexible enough to develop a public-private partnership that was appropriate for each firm. In these projects, administrative staff played a relatively low-profile role when a firm appeared to have a feasible strategic plan for conversion and the capacity to design its own training and select its own training provider. When a firm appeared to be floundering, project staff played a more proactive role in suggesting steps for the firm to take and possible sources of public support.

The Importance of Defense Conversion Expertise

The individuals staffing the DCA demonstration projects had widely varying skills and employment backgrounds, which influenced the roles they played in public-private partnerships. In several projects, staff were experts in technology transfer and the conversion process. In these projects, staff had the qualifications to consult directly with participating firms about their conversion needs. In other projects, administrators who were not themselves experts in the conversion process served as brokers and facilitators to help link firms to expert consultants and/or trainers.

Finding #12: Demonstration project staff were most likely to be well-received by participating firms if they were perceived as being able to help firms access high quality services. As long as public sector partners could provide this access, it was not necessary for them to have in-house staff with defense conversion expertise (although this was perceived as an added benefit by participating firms).

It was important to participating firms that project staff be able to arrange for them to receive services of high quality. The business consultants provided or recommended to companies by the DCA demonstration projects were generally well received by the participating companies. Participating firms appreciated project help in identifying outside consultants and, especially, assistance paying for the services of consultants. Projects were perceived to be successful in linking firms to qualified consultants.

Individual businesses were particularly appreciative of their public sector partners if they thought they were sensitive to and understanding of the private sector perspective. They were likely to criticize their public sector partners if they perceived them as being more interested in monitoring government regulations or maintaining required paperwork than in assisting firms in meeting their objectives. To preserve a positive relationship with Amphenol Aerospace and Lockheed-Martin Control Systems, the Title III substate grantee responsible for administering this grant ultimately had to hire four public-sector staff to take care of the paperwork associated with documenting workforce training.

Importance of Being a Neutral Party with Respect to Internal Management-Union Relationships

Because of the important decisions that were being made about how to restructure the workplace and reorganize job responsibilities, the internal labor and management partners in the DCA projects often were involved in sensitive negotiations about their future roles and responsibilities.

Finding #13: Demonstration administrators were often more effective if they were perceived as a neutral party with respect to the internal relationships between companies and their unions.

As a neutral partner in the highly charged context of workplace restructuring, project staff could remind both management and union representatives within the firm of the advantages to be gained by making progress in achieving diversification goals. In the Minnesota Defense Conversion Adjustment Demonstration, the Teamsters Service Bureau was very careful to maintain neutrality between the Teamsters Union local and Alliant TechSystems on a number of difficult issues relating to project design and implementation. As a result, they were able to keep attention focused on how to make progress in providing the planned workforce training. In contrast, IAM Local 727, which administered the IAM Project, perceived itself as an advocacy organization for workers and carried this understanding of its role into the administration of the DCA project. In at least one instance, the advocacy role played by the IAM prevented the project administrator from resolving implementation difficulties with a participating firm.

Role of the Public Partners in Linking Training to Conversion Objectives

By emphasizing the importance of contextual learning and links between training and conversion goals, project administrators played an important role in keeping the training focused on overall project goals and objectives.

Finding #14: Public sector partners had a particularly important role to play in ensuring that workforce retraining was used to further the larger goals of diversification/ conversion and workplace reorganization in participating firms.

Project administrators encouraged firms to view conversion planning, workplace reorganization, and workforce training as parts of an integrated process. One way projects encouraged firms to keep retraining focused on overall project objectives was to encourage a close connection between business consulting services and the design and delivery of retraining. Several projects encouraged or supported firms in designing reorganization efforts and retraining as a unified process. For example, in the Hummer Project serving AM General, the project administrator supported the company's efforts to secure the services of a single consulting firm that provided, as part of an integrated service package, assistance in restructuring the company's ten departments using a participatory process and formal training in teamwork and HPWO skills. Similarly, in the Management Assistance and Technology Training Project in St. Louis, the project promoted a unified approach to business assistance and workforce training.

In other projects, demonstration administrators helped coordinate the sequencing and content of distinct business consultation and workforce retraining services. For example, the Long Island Defense Diversification Project used the results from company training needs assessments performed by outside consultants to facilitate the development of TQM and HPWO training curricula by local educational institutions, which then were used to provide training to the participating firms.

Another approach used by public sector partners to link workforce reorganization efforts and retraining was to encourage training providers, some of whom did not perceive themselves as organizational consultants, to broaden the scope of training to include facilitation of the practice of new skills in the workplace. For example, in the Long Island Defense Diversification Project and the Massachusetts Strategic Skills Program, training providers were encouraged to work with firms to assign workers to project teams or work unit teams prior to training, to address "real life" firm problems as examples during training, and to support the ongoing functioning of the teams after the conclusion of training. Workers benefited because they were able to practice their new skills in a concrete workplace setting; companies benefited because training was being applied in support of the planned restructuring of work roles.

NEW RELATIONSHIPS WITHIN FIRMS

In planning and implementing demonstration activities, new partnerships within firms were developed to effect needed changes. Organizational innovations included: (1) new collaborative partnerships between management and labor and (2) new procedures to involve managers and workers at all levels in the day-to-day activities associated with the demonstration effort.

The Development of Collaborative Partnerships Between Management and Workers

In some demonstration projects, particularly where workers were not represented by organized labor, plans for restructuring and workforce retraining were developed primarily by management. In other projects, the decision to participate in the demonstration and the plan for diversification and/or restructuring were arrived at through a joint planning process involving worker representatives and management.

Finding #15: Where full partnerships between management and labor evolved in support of defense conversion goals, they had the potential to transform a confrontation-oriented labor-management relationship into a collaborative relationship. Supported by a new sense of trust and purpose, the firms were then able to make rapid progress in reorganizing the workplace to support high performance objectives.

New partnerships between labor and management were at the crux of project efforts in a number of firms. At their best, the DCA demonstration projects supported the development of collaborative partnerships between labor and management that permitted both sides to make compromises in order to further the common goals of job preservation for the workforce and survival for the firm. The compromises made by unions were often substantial, including reduced hourly wages for workers in new commercial divisions to enable the division to compete in commercial markets, and relaxation of strict seniority rules for access to training and job assignments to foster stability of new work teams.

Collaborative partnerships developed to meet the challenges of defense conversion were exemplified by The Hummer Project (involving AM General and its partner, United Auto Workers Local #5) and the Bath Iron Works Technology Reinvestment Project (involving Bath Iron Works and its partner, the International Association of Machinists). The Hummer Project represented the culmination of a gradual cultural shift in the relations between AM General and the United Auto Workers (UAW). Although management was somewhat slower than the union to recognize that a commitment to conversion was the only way to stabilize the firm and preserve the workforce, both management and the union were full partners in the effort to establish "New Work Systems" at AM General, using a participative redesign process. In the case of Bath Iron Works, a teaming agreement between the Chief Executive Officer (CEO) of Bath Iron Works and the National President of IAM resulted in an agreement to undertake dramatic reorganization of work roles and development of a high performance workplace to help the company enter the commercial shipbuilding market. For both sides, the benefits were expected to be a more highly skilled and more flexible workforce capable of high quality work and high productivity for commercial markets.

As a secondary benefit of strong union involvement, active support by unions was found to be a positive factor in overcoming the reluctance of workers, particularly older workers, to participate in training and learn the skills necessary to perform new functions in the workplace. For example, at Market Forge, a firm participating in the Massachusetts Strategic Skill Program, the union participated in interviewing and selecting potential trainers and designing the training curriculum. Similarly, the Teamsters Service Bureau was instrumental in developing a training design for the Minnesota Defense Conversion Adjustment Demonstration that encouraged at-risk assemblers to participate in basic skills enhancement opportunities and machinist training.

The Involvement of Stakeholders at All Levels of the Company

All projects agreed on the importance of involving top managers in planned change efforts. Most projects also recognized, early on, the need to involve middle managers, work supervisors, and worker representatives as well in planning for workforce reorganization and retraining.

Finding #16: Projects were most successful when they involved all key stakeholders in plans to reorganize the workplace and undertake major workforce retraining. Involvement in planning and training by top company management, middle management, work supervisors, and workers led to stronger commitment to project goals by all stakeholders.

Without the commitment of all key stakeholders within the firm, training and diversification efforts were sometimes derailed after they were begun and efforts to utilize new skills within the reformed workplace were hampered. Involvement by top management was recognized by all projects as essential. However, even projects that thought that they had the full support of top management sometimes found that their efforts to develop high performance work organizations were undermined or dismantled after turnover at the top management level (e.g., at H.R. Textron in the IAM Project in southern California).

Projects also found that it was important to provide both top and middle managers with a detailed orientation to the training plan and how it would support corporate strategic goals. This orientation was important so that managers at all levels understood how they could support the ongoing training and reorganization efforts. The majority of projects either encouraged middle managers and work supervisors to attend teambuilding and TQM training alongside workers or designed a separate track for management training to ensure that managers and supervisors would be able to facilitate team formation and support team functioning in the workplace.

Projects often encouraged firms to develop committees or boards with both management and worker representation to participate in the design and oversee the implementation of the workforce training/workplace reorganization efforts. Projects that used this format found that it helped to improve ownership of the training plans by middle managers as well as by workers. For example, in the Minnesota Defense Conversion Adjustment Demonstration, a project steering committee referred to as the "Internal Planning Team" included participation by Alliant TechSystems' Human Resources Director, production managers for the assembly and manufacturing divisions, and shop stewards selected to represent workers from the different work groups scheduled to receive training. Because this group represented most of the key stakeholders within the company, it was able to modify the training design as needed over time to resolve implementation problems.

The Development of New Relationships Among Workers

Projects supporting the development of high performance work organizations encouraged participating firms to use team-based structures to apply high performance work skills within the workplace. Several different types of team structures were encouraged. Cross-functional project teams were used to plan process improvements that required changes across a number of departments (e.g., simplifying the process of taking customer orders, or making a series of changes to improve the quality inspection success rate for a given component or product). Work-unit teams were used to reorganize the day-to-day functioning of an individual department, by changing the physical work layout to improve efficiency, introducing new machinery, and/or changing job functions and working procedures. Both types of teams were intended to encourage the application of high performance workplace skills by workers to improve work-unit and overall firm performance.

Finding #17: To take advantage of workforce training, firms needed to create opportunities for workers to apply their new skills as members of workplace teams. Some firms benefited from outside assistance in helping workers to practice their new skills in the workplace.

Trainers often recommended that teams start with "easy problems" to build worker morale and help workers develop the confidence to tackle harder problems. Although most firms indicated that they were pleased with the results of team-based problem-solving efforts, several firms in the Massachusetts Strategic Skills Program said they tried to initiate too many project teams simultaneously, and indicated that it was hard to support the functioning of a large number of project teams simultaneously. Workers in these firms complained that it was hard to perform their regular job description because they were so busy with their assignments on cross-functional project teams.

Projects sometimes benefited from the involvement of an outside business consultant or trainer to assess corporate training needs within each work unit before the development of a training plan. In one company that participated in the Massachusetts Strategic Skills Program (Barry Controls), a training consultant observed work-unit operations and talked to production managers and workers about how they would like to see work-unit performance improved before developing a plan for how training could help workers improve their job performance.

Companies also benefited from ongoing consultations to facilitate worker performance in the reorganized work units after the completion of training. For example, at Sargent Controls, workers who had completed statistical process control (SPC) classes did not begin identifying problems to fix in the workplace until the project arranged for the instructor to come back to facilitate SPC team meetings. SPC teams then began meeting regularly and redesigned several parts and processes that saved the firm substantial amounts of money.

Work unit reorganization efforts were made considerably more difficult if only some of the workers had participated in training. Work reorganization efforts were set back in one project (The Hummer Project at AM General) after a layoff caused a ripple effect as more senior workers "bumped" less senior workers to access the remaining jobs. As a result, the membership of work-based teams changed, and the new work teams had to start over in developing their understanding of their work functions and ability to work together.

SERVICE DESIGN AND DELIVERY

The DCA and supplementary projects supported a wide variety of business assistance and retraining services across the 88 participating firms. In some instances participating firms took major responsibility for developing their own conversion plans and identifying their own training needs. Sometimes these firms had already identified specific courses they wanted to provide to their workers and specific training providers they wanted to use by the time they applied for project assistance. Other firms needed help at various stages of the service design and delivery process. As described in previous sections of this report, some projects targeted firms at a specific stage of the conversion process and developed a standardized menu of services designed to meet the needs of the targeted firms, while other projects offered a flexible menu of training and business assistance services to meet the needs of a wide variety of firms at different stages in the conversion planning and restructuring process. Despite the variation in services provided to firms, several overall findings emerge from the experiences of the dislocation aversion projects.

SERVICES PROVIDED PRIOR TO TRAINING

Two types of assessments were encouraged by some projects prior to workforce retraining: firm assessments to support overall business planning and worker assessments to identify training needs and priorities. Assessments were followed by services designed to assist firms in developing strategic plans for conversion and training plans to further their corporate goals and objectives.

Firm Assessments to Support Strategic Planning

Firm assessments were designed by some projects to provide a solid foundation for subsequent services. As developed by these projects, assessments were intended to provide participating firms with information about themselves, their strengths and weaknesses, and the potential for marketing their products or core competencies in commercial markets.

Finding #18: Although firm assessments were sometimes extremely helpful to the participating firms in getting them to understand their strengths and weaknesses, firms found them very time-consuming and sometimes had a hard time understanding their relevance to the development of conversion, reorganization, and retraining plans.

Assessments that involved active participation by managers and workers appeared to be more effective in setting the stage for subsequent project activities than assessments performed by outside consultants. Several projects emphasized the importance of strong management team (or labor-management team) involvement in firm assessments. The self-assessments encouraged as a first step by the MATT Project and the Long Island Defense Diversification Project were designed to inform the strategic planning process in participating firms by getting key management staff involved in the process of identifying opportunities for change. Although only a minority of the firms participating in both projects completed these assessments, firms that completed the "Achieving Manufacturing Excellence" self-evaluation encouraged by the MATT project praised it highly. In contrast, firm assessments used in the Sargent Controls Project were prepared by outside consultants rather than requiring active company participation. Although the reports prepared by the outside "economic diversification teams" appeared to be well-received by the firms in this project, it was never clear exactly how the assessment was supposed to influence other project activities.

Worker Assessments to Support the Development of Training Plans

Worker assessments were used by several projects to inform the development of training plans. A variety of different arrangements were made for the completion of worker assessments, including completion by internal labor-management teams and completion by outside consultants. Worker assessments were intended to show what types of training would be needed to provide workers with the skills that would help the firm compete in commercial markets.

Finding #19: To accomplish their purpose, assessments of worker needs need to (a) identify the workforce skills needed by firms to achieve their strategic plans, (b) identify the actual skills of current workers, and (c) identify training curricula needed to bring workers up to the required skill levels.

Training needs assessments performed by and for firms within the DCA projects did not always accomplish each of these functions. Thus, they were sometimes of limited utility in helping firms to design training curricula that would help them reach their strategic goals. A worker assessment performed by an outside consultant during the first phase of the Sargent Controls Project was merely descriptive: it described workers' skills and interests, but failed to focus on skill gaps that needed to be addressed to help the firm succeed in commercial markets. The training needs assessments performed for all participating firms during the first phase of the Long Island Defense Diversification Project specifically addressed training needed to convert the firms into high performance work organizations, but did not provide enough detail for training providers to use in developing HPWO curricula. In the Minnesota Defense Conversion Adjustment Demonstration, the St. Paul Technical College performed a high-quality functional assessment of the firm's needs for skilled machinists, but was not permitted to assess the skill levels of current machinists, due to union fears that this information might be used by the firm to limit the future job opportunities available to less skilled workers. As a result, the training courses developed as part of this project were not always well-matched to the skill levels of the participating workers.

In contrast, the skills assessment process carried out as part of the Bath Iron Works Technology Reinvestment Project was based on a careful analysis of the skills workers would need to perform in the transformed workplace and was used to identify the training needs of each worker. In this project, a labor-management committee selected workers to be invited to receive training in connection with the implementation of a new job classification system. Each worker who volunteered for training received an individual assessment to determine what instruction would be needed to achieve proficiency in the skills required to perform the new job classification.

FEATURES OF EFFECTIVE TRAINING

Overcoming Resistance to Change

Some projects found that various groups of stakeholders were uncomfortable with change and developed resistance to conversion, the reorganization of the workplace, or the training associated with these activities. Projects developed various strategies to overcome this resistance.

Finding #20: Projects were more successful in overcoming resistance to conversion, reorganization, and retraining when they provided top and middle managers, work supervisors, and workers with an overview of company goals and objectives and described how the training process was designed to further these goals. Follow-up training for each group was also useful to teach stakeholders how they could support the change process within the firm.

A number of projects found it essential to provide an initial orientation session or course to introduce all stakeholders within the company to the company's conversion goals and objectives and how planned activities were designed to support these goals. Leaving any one of these groups out of the process sometimes imperiled the success of the entire effort. Barry Controls, a firm that participated in the Massachusetts Strategic Skills Program, provided managers with an initial 24 hours of training prior to the delivery of training to other workers. In retrospect, firm respondents said that they had failed to adequately prepare one important stakeholder group—work supervisors—for their new roles in the transformed workplace. Additional training and support to work supervisors would have helped them understand how to be more effective in encouraging worker initiative.

In the IAM project, H.R. Textron concentrated its retraining efforts on a single division as a pilot test of how the firm might transform itself into a high performance work organization. While the company president and workers and work supervisors in the target division were motivated and involved in the retraining and restructuring effort, the project had forgotten to assuage the fears of middle managers from other divisions about the coming changes. After a turnover in top company management, middle managers from other divisions convinced the new president to dismantle the training and reorganization effort, even though the pilot division had documented significant productivity improvements as a result of its transformed way of working.

In preparation for a major reorganization and retraining initiative, Bath Iron Works developed a detailed orientation to high performance workplace organization principles and provided this orientation to all employees, including all managers and shop workers. All employee groups were also invited to participate in the planning process for subsequent retraining efforts. At least partly as a result of this comprehensive orientation, the planned changes at Bath Iron Works were well accepted by all parties.

Workers, particularly older workers, were also sometimes resistant to the changes implied by training. In the Amphenol Aerospace Defense Diversification Project, one entire group of senior production workers dropped out of a leadership training course after the first lesson because they failed to see any relevance in the course materials being taught (skills to support increased worker involvement in problem solving and continuous process improvement). Older workers in other firms were fearful about participating in training to upgrade their math skills, as well as about workforce change in general. Some projects increased worker buy-in by involving workers in brainstorming about the problems that they would like to tackle in team projects. Moduform Corporation, in the Massachusetts Strategic Skills Program, found that workers became quite excited about training in TQM and process simplification when they were formed into teams prior to training and identified real workplace problems that they would be able to address during and after formal training.

Training Tailored to the Needs of Individual Firms

Projects used a wide variety of training providers and curricula to support firms in their conversion efforts. As described in Chapter II, training covered a wide range of subjects and was provided by public educational institutions, private training consultants, and internal company trainers.

Finding #21: Across the many variations in training content, course designs, and training delivery modes, firms appeared to be best served if the training provider was able to customize the training content to address each firm's particular context and conversion/reorganization challenges.

Customization of training increased the effectiveness of training as a tool to support change within the participating firm. Features associated with customized design and delivery of training included the conduct of training at the workplace and follow-up assistance from the trainer to assist the company in applying the workers' new skills to support workplace restructuring efforts. Customization was achieved under several different scenarios. Some projects permitted companies to maintain a high degree of autonomy in the design and delivery of training. When autonomy coincided with a clear strategic goal for conversion and a clear idea of how to use training to further that goal, participating companies were able to design highly effective training approaches for themselves. For example, Lockheed-Martin Control Systems was able to develop a sophisticated matrix of course offerings and workplace applications that met its specific conversion needs. The self-directed training process conducted by this firm was reinforced by the use of the company's internal training staff for course delivery and follow-up. Firms participating in the Rhode Island Workforce Protection Program were also given a free reign to select the type of training and training provider that best fit their individual context and needs.

Customizing training to match the needs of a specific firm was also possible even when project administrators played a more active role in influencing service provider choice or training content. In fact, the generic HPWO curricula developed by the project administrators in the Long Island Defense Diversification Project and the California Supplier Improvement Program were not intended to be delivered using a standardized "off-the-shelf" approach. Rather, the hope of these projects was that individual training consultants working for the business services center at the participating public educational institutions would adapt the core curricula to meet the specific training needs of the participating firms. Both of these projects encouraged training providers to visit client firms prior to training to discuss their particular situations and training needs and to provide training on-site at the workplace.

Customization was most problematic for firms that selected training provided in an off-site classroom setting. If training providers did not assist workers in understanding how the skills would be applied in their specific work settings, trainees sometimes had difficulty translating the generic course content to an applied setting. However, a number of the companies that participated in classroom-based training for the group of ten firms participating in the second phase of the Sargent Controls Project were very pleased with the content of training, perhaps because the training topics had been carefully developed to respond to the common needs of the participating firms and were supplemented by individual consultant assessments of each company's strengths and weaknesses.

Applied Training of Sufficient Intensity

Project and firm designs for training tended to encompass broad extremes in terms of the length and intensity of services. Contemporary adult training theory holds that short, intensive training followed by direct and relevant application of that training is most effective in changing behaviors and positively impacting the workplace. Firms took a number of approaches to ensuring that training would offer opportunities for application of skills to the workplace and would be intensive enough to support real change.

Finding #22: Projects found that training was most effective when it was scheduled over an extended period while providing ample opportunities for participants to apply their new skills in the workplace.

A number of firms found that scheduling training over an extended period was beneficial for several reasons. First, it was least disruptive to production deadlines. If training was spread out over a number of weeks, workers could attend training during paid work hours without shutting down production for extended periods. Extended training periods also enabled workers to practice and apply their new skills in the workplace as soon as they learned them in the classroom. When workers attended training as members of cross-functional or work-unit project teams, they often had the opportunity to apply the new skills to specific workplace problems and ask for instructor feedback on their progress.

A relatively small number of hours of formal classroom training could be quite effective in supporting changes in the workplace if these hours were supported by applied practice or facilitation of team efforts. For example, in the Hummer Project, AM General used 16 hours of classroom training in teamwork and communication skills in combination with applied consultation on the restructuring of the workplace in each of its divisions to support team processes. The two types of activities were mutually supportive. Amphenol Aerospace, while limiting training to one to one and one-half hours per week to minimize disruption of production, applied this training immediately on the shop floor and gained the advantages of applied practice.

Projects were less successful, however, if training dropped below a minimum level of intensity or had no applied component. For example, the eight AM General suppliers participating in the Hummer Project received only 16 hours of classroom training in HPWO skills without applied consultations on workplace reorganization. Most of these firms found that the training hours were too abstract and too brief to make a great difference in how they organized their workplaces. WesTech, a firm participating in the IAM Project, scheduled workers for only two hours of training a month. At this rate, it would have taken workers a long time to complete four planned core training courses and graduate to eight elective courses. A number of workers in this project voluntarily spent time in the on-site learning lab before or after their paid work shifts so they could progress at a faster pace.

Selection of Trainees Based on Strategic Business Needs

Projects varied widely in how workers were matched to training. Some firms designed training from which all workers and managers could benefit; others targeted specific courses to specific work groups or departments within the company. One of the key issues in many projects was whether workers could volunteer or were assigned to training, and what role managers, unions, and individual workers played in determining what training was offered to each worker.

Finding #23: Training was most effective in furthering company goals when individuals were selected for training based on the strategic business needs of the company.

Firms enjoyed particular success when they targeted training to specific groups of people based on an assessment of the skills that would be needed to enter commercial markets. For example, the Management Assistance and Technology Transfer Project assisted managers in obtaining training in activity-based cost accounting practices essential for commercial production. Lau Technologies in the Massachusetts Strategic Skills Program provided training to staff assigned to its new marketing, customer services, and research and development departments to support their new job functions. Several firms provided concurrent engineering training in an effort to create a commercial culture or "mind-set" among engineering personnel.

When firms designed training to inform all workers about high performance workplace skills and continuous improvement tools, matching workers to training was not an issue. However, when a number of different types of training needed to be matched to appropriate workers, assignments to training by joint labor-management committees or human resource departments were often effective in ensuring that the appropriate workers received training. Among the supplementary projects, Chandler Evans and Lockheed-Martin Control Systems each had sophisticated in-house human resources and training departments that established training matrices and then proceeded to identify and schedule individuals for training.

Union insistence on using seniority to select workers for training sometimes made it more difficult to ensure that the workers who received training were the workers from whose training the firm would realize the greatest benefit. For example, in the Minnesota Defense Conversion Adjustment Demonstration, the Teamsters union local initially insisted that experienced machinists be offered advanced machinist training by seniority. Only after it became apparent that the most senior workers were not always the ones who would benefit the most from this training was an agreement reached whereby senior workers would "stand aside" in favor of less senior workers.

Appropriate Mix of Specific Technical Skills and Generic HPWO Skills

Many of the projects sought to encourage training in high performance workplace skills out of a belief that the reorganization of work processes would be instrumental to the ability of most firms to develop the culture necessary for success in commercial markets. Along the way, however, some of these projects noticed that focusing on HPWO was too narrow.

Finding #24: Some projects discovered that firms also needed to provide technical training in specific occupational skills prior to or in concert with training in high performance workplace skills if they were to succeed in tying training to their plans for conversion.

Among the supplementary projects, several firms successfully blended technical skills training and HPWO training into their overall training approach at the project design stage. In close coordination with the International Association of Machinists, both Bath Iron Works and Chandler Evans included training in multiple crafts in projects that were designed to simplify job classifications and introduce high performance work organization into these companies to make them more competitive in commercial markets. Lockheed-Martin Control Systems also took this approach to integrating training in specific occupational skills and training in total quality management and team-building skills. All three firms developed very ambitious and very expensive overall training plans. All three firms found that a mix of technical and HPWO skills was essential to pursue their conversion goals.

Several projects started by emphasizing high performance workplace skills but discovered that workers in the participating firms did not always have the technical skills to produce the products that were tied to the firms' conversion plans. This was most noticeable in AM General's division, where workers had technical difficulties rebuilding old military vehicles for resale to the Department of Defense, and at Amphenol Aerospace, where workers needed to become more proficient at operating computer-assisted machines that were being introduced to the workplace.

Other projects wanted to keep a primary project focus on supporting firms to become high performance work organizations, but recognized that providing support for technical skills training was an effective way to get companies interested in participating in the project. The Long Island Defense Diversification Project used technical skills training as an incentive to attract companies into HPWO training. During the second round of the Massachusetts Strategic Skills Program, project staff also offered staff support for a broader mix of services, including basic skills training, training in specific occupational skills, as well as training to increase teamwork and worker participation in problem-solving in the workplace.

STRATEGIES FOR SUCCESS

The experiences of the DCA demonstration projects and supplementary projects discussed in this chapter suggest the following strategies for success for future public efforts to prevent layoffs by assisting companies with restructuring.

(1) Support Training Linked to Conversion and Workforce Retention Objectives

- Encourage participating firms to treat retraining as a strategic tool to support corporate goals and objectives.
- In planning timelines and goals for public-private partnerships, recognize that defense conversion is a long-term effort
- Recognize that public funding will not be sufficient to accomplish conversion goals without substantial investment of the resources of the participating firms.
- To ensure accountability and confirm progress, require participating firms to set measurable objectives and document progress.
- Approach private-sector partners in a business-like manner and with an appreciation for the company point of view.

(2) Target, Recruit, and Select Appropriate Firms

- Use senior project staff with business experience in outreach efforts.
- Target recruitment efforts to top-level company executives.
- Emphasize the strategic advantages of participation.

- Assess whether interested firms are genuinely committed to the fundamental changes necessary for conversion.
- Select companies that have sufficient financial stability, management commitment to conversion, and commitment to training objectives to overcome implementation difficulties with a high probability of success.
- Choose companies that want and can benefit from the available services.

(3) Develop a Training Approach that Addresses the Needs of the Targeted Firms

- Provide guidance in overall service designs and strategies, while offering firms the ability to control the details of planning and implementing services.
- Develop the capacity to help link firms to high quality business assistance and retraining services.
- Ensure that training is used to further the larger goals of diversification and workplace restructuring.
- Recognize that firms may need to provide technical skills training in combination with training in high performance workplace skills if they are to succeed in supporting their plans for conversion.

(4) Support Firms in the Design and Implementation of Their Conversion Efforts and Training Activities

- Encourage firms to involve all key stakeholders, including top managers, middle management, work supervisors, and workers in the design and oversight of project activities.
- Encourage firm needs assessments and worker skills assessments that provide useful information to guide strategic planning and the design of retraining for workers.
- Encourage firms to work closely with training providers to develop customized training designs that address the firm's specific context and conversion and reorganization goals.

- Encourage firms to provide all stakeholders with an overview of company goals and objectives and how the training process will further these goals.
- Encourage firms to provide opportunities for workers to apply their new skills immediately in the transformed workplace.
- When necessary, encourage firms to get outside assistance in nurturing and facilitating new work relationships.

(5) Encourage Firms to Continue Change Efforts Beyond the Demonstration Period

- Promote networking among firms to achieve economies of scale in training design and delivery.
- Encourage firms to develop the capacity to continue training and conversion efforts after the end of the project.

CHAPTER IV
CONCLUSIONS

IV. CONCLUSIONS

The Defense Conversion Adjustment Demonstration provided an opportunity to test how public funds can be used to help support the adjustments necessitated by reductions in defense spending. Impacts from defense downsizing, which began in the late 1980's and are expected to continue at least to the end of the decade, are occurring at the individual, firm, and community levels. The 19 Defense Conversion Adjustment (DCA) demonstration projects each intervened at one or several of these levels.

In planning for the DCA demonstration, federal agencies, particularly the Departments of Labor and Defense, hoped to learn how to intervene effectively to facilitate and support the economic adjustment process. By providing funding with a minimum of regulatory constraints and encouraging locally initiated project designs, the federal agencies concerned with defense conversion hoped to elicit project proposals that would: (1) test innovative designs, (2) act as catalysts for change, (3) create new organizational partnerships, and (4) promote effective outcomes.

In the remainder of this chapter, we comment on how well the projects testing dislocation aversion strategies met these four expectations and the implications their performance may have for public policy.

PROMOTING INNOVATION

The announcement of the Defense Conversion Adjustment Demonstration emphasized that innovation was a pivotal goal of the demonstration. The relative absence of administrative rules and regulations for this program was intended to give each grantee enough flexibility to try new designs in responding to the defense drawdown. It was hoped that innovations tested by demonstration grantees would have future applicability not only in the defense conversion context but also in broader contexts. For example, if providing training to incumbent workers helps defense firms adjust to structural changes in the defense industry, it may be useful in helping commercial firms adjust to structural changes in other industries as well.

For the dislocation aversion projects, the practice of using federal funds to support training of incumbent workers was new. In this sense, all of the dislocation aversion projects were highly innovative. Particularly novel was the idea of linking the planning and implementation of workforce retraining to the processes involved in firm-level strategic planning and workforce reorganization. In linking workforce retraining to related transformation efforts within the participating firms, the dislocation aversion projects took advantage of the relaxation of expenditure limits to use significant amounts of demonstration funds to support non-training activities, such as assessments of company strengths and weaknesses, assessments of needed workforce skills, and business consultation services.

The breadth of the demonstration-funded activities appears to be one of the greatest strengths of the DCA projects. All of the dislocation aversion projects included workforce training within the menu of demonstration-funded activities. When faced by gaps in the capacity of the participating firms to pursue their commercialization goals, however, most projects decided that investments in workforce training would be enhanced if they expanded their activities to ensure that none of the essential steps in conversion planning and implementation were overlooked. For example, one project administrator said, “When a firm lacked commercial applications for their products, we had to train them to think about transferable core competencies and how they could be applied to the development of new products.”

Preliminary information about project outcomes indicates that these links between training, strategic planning, and restructuring were fruitful, particularly if stakeholders at all levels of the firm were involved as active participants in planning for and overseeing the changes in the workplace. While it was difficult to measure the precise extent that training contributed to increased productivity and/or sales, a number of firms did experience increases in commercial sales and avoided layoffs, and attributed these changes, at least in part, to their involvement in the demonstration. Other firms expected the benefits of training would become apparent in the “bottom line” measures of increased sales after reorganization efforts had been completed.

USING PROJECT FUNDS AS A CATALYST TO PROMOTE CHANGE

Because the economic adjustments necessitated by defense spending cuts are extensive and the public funds available to support defense conversion are limited, another goal of the DCA projects was to use the available funding in ways that could stimulate further public and private investments. In addition, the federal agencies interested in defense conversion wanted to identify opportunities for public investment that would provide the greatest return to the taxpayer. This necessitated a careful balancing act on the part of the DCA projects: selecting workers, firms, and communities that did not have sufficient skills or resources to complete successful conversions on their own, yet had the potential for achieving successful outcomes, given the available assistance.

Access to demonstration funding and expert advice provided a particularly effective catalyst for change for highly defense-dependent companies that were serious about preparing to enter commercial markets. As expressed by one DCA project administrator, "We became an effective champion for change within these companies. As informed outsiders, we helped strengthen the voices for change within the company." Although most firms indicated that they would have pursued change on their own without the demonstration, they said that changes would have been slower and more modest without demonstration-sponsored business consultations and public funding support for training. Company and taxpayer benefits from participation appeared to be lower for firms that did not have a clear commitment to reducing their defense dependency or were already well-established in commercial markets.

Whether or not the dislocation aversion projects required formal matching funds from participating firms, companies most often invested substantial resources of their own in the conversion and change process as a whole. In a number of cases the public sector investment was dwarfed by the amount of resources provided by the firm to pay workers to attend training, combined with the costs of supporting new product development, changes in workplace technology, and changes in work processes.

Several projects sought to use the DCA grant to leverage additional resources not directly involved in the demonstration. Strategies to "seed" similar processes in other firms included efforts to establish information sharing and training networks among firms with common interests and needs or between firms and their suppliers. Information and training networks attempted by several of the dislocation aversion projects offered opportunities to achieve economies of scale in service design and delivery.

In addition, some projects tried to capture the benefits of new training designs developed during the demonstration by encouraging local education institutions to offer these "core curricula" on an ongoing basis to firms in the local community. Several DCA demonstration grantees (e.g., in Massachusetts and Arizona) also succeeded in obtaining follow-on public funding from a variety of sources to continue serving transitioning firms after the end of the demonstration. The possibility of fee-for-service arrangements was also being explored by some projects as a way to continue addressing firms' needs for assistance in responding to changing market conditions. By using these mechanisms, the DCA dislocation aversion projects succeeded in stimulating a process of change that extended well beyond their initial scope.

BUILDING NEW ORGANIZATIONAL PARTNERSHIPS

Another difference between the DCA demonstration projects and other more traditional Department of Labor (DOL) activities is the greater organizational flexibility given the demonstration projects to select the administrators and form partnerships among a wide variety of organizations to design and implement the demonstration project. Responding to the challenge, the DCA demonstration projects created new relationships at the state and local levels, e.g., between employment and training agencies, educational institutions, human services agencies, private corporations, labor unions, community planning boards, the military, economic development agencies, and state and local officials.

The demonstration projects benefited substantially from the involvement of "nontraditional" project partners. Successful partnerships among economic development and employment and training agencies at the local level suggest that there would also be benefits from greater coordination of economic adjustment, economic development, and employment and training funds and programs at the federal level.

For the dislocation aversion projects, the active involvement of labor unions, company management, and business consultants brought together skills and perspectives that made possible the integration of firm-level conversion efforts and workforce reorganization/retraining initiatives. Project partners were convinced that the joining of forces in an integrated approach to strategic change at the participating firms was far more effective than treating workforce retraining within firms as an independent process. In some cases, the demonstration projects also fostered the development of new labor-management partnerships that transformed the traditional conflict-based relationship into a cooperative partnership to achieve common objectives (survival for the firm and stable employment for the workers).

ACHIEVING DESIRED OUTCOMES

Measuring outcomes was a challenge for many projects. Isolating the effect of the funded demonstration activities on outcomes was difficult, given the importance, complexity, and extreme variation of the contexts in which the demonstrations operated and the absence of any comparison sites or groups of participants to determine what would have happened in the absence of the demonstration.

The dislocation aversion projects documented widespread successes in recruiting firms that were in need of assistance with defense conversion and delivering services to assist firms with identified gaps in the conversion process. While documentation of other outcomes was hampered by a number of factors including concerns about confidentiality, inability of systems to measure improvements in worker productivity and product quality, and lack of sufficient time to register longer-term changes in overall revenues, available data suggested that most participating firms did achieve their objectives. Firm sales either grew or remained stable during the demonstration period and immediately after, short-term layoffs were averted, and a number of firms succeeded in entering new markets. The strongest evidence of layoff aversion occurred in the case of AM General, which avoided a planned layoff of 400 workers by transferring workers from its traditional defense division to new commercial and alternative defense operations.

Perhaps the greatest question raised by the dislocation aversion projects was how to balance the relative importance of reduced defense dependency and increased sales in accomplishing the layoff aversion goals of the demonstration. Although many of the participating firms wanted to increase their flexibility to move into commercial markets in the long run, they also were motivated to continue to pursue defense-related sales. A number of the participating firms anticipated that defense-related sales would continue to dominate their sales (and provide a majority of their profits) over both the long-term and the short-term, even when they were also serious about diversifying into commercial markets. Participation in demonstration services was perceived by many firms as beneficial in increasing their competitiveness in both the defense and commercial sectors.

CONCLUSION

Like any major experiment, the DCA demonstration contained both successes and failures. When the Department of Labor requested proposals for these grants, it deliberately invited applicants for funding to "break the mold." Project designers responded by taking risks in how they proposed to set goals, form partnerships, select and recruit target groups, design and deliver services, and monitor their progress. Risk-taking inevitably leads to mistakes, and this demonstration included its share of mistakes. But risk-taking also leads to new knowledge, new models, and new lessons.

The lessons learned from the dislocation aversion projects are highly relevant to the current era of rapid restructuring of markets in response to global competition and new production technologies. The primary lesson suggested by the dislocation aversion projects is that by encouraging firms to invest in training incumbent workers as a readjustment strategy, the public sector can simultaneously help companies stabilize and increase their sales and help workers retain their jobs and enhance their skills. As one project spokesperson said, "This is the key: getting companies to see that training investments that enhance long-term revenue growth are a better investment in the survival and growth of the firm than other strategies that might enhance short-term profitability."

To continue the efforts begun by the DCA demonstration projects will require workforce development, economic development, and community development agencies at the federal, state, and local levels to recognize their common interests. By undertaking close coordination of activities and funding streams, agencies working together can realize enhanced outcomes for individual workers, firms, and communities. The dislocation aversion projects have demonstrated the effectiveness of coordinated efforts to address complex readjustment challenges at the firm level. To build on their initial successes, future programs will need to develop responses that are multi-dimensional, rather than one-dimensional, and that draw on areas of expertise that cross traditional program and disciplinary boundaries.

APPENDIX A

DEFENSE CONVERSION ADJUSTMENT PROJECT PROFILES

FACT SHEET: DEMONSTRATION PROJECT

THE HUMMER PROJECT

Project Location	South Bend, IN	*Grantee*	Workforce Development Services (WDS), the administrative entity for a local SDA
Type of Approach	Dislocation Aversion	*Project Administrators*	AM General Corporation; United Auto Workers Local 5
Period Covered by Grant	November 1993–June 1995	*Key Contact*	Ann Jones, Title III Coordinator, WDS
Grant Amount	$500,000	*Geographic Area*	Region surrounding South Bend, IN

Context

South Bend is located in semi-urban northwestern Indiana, on the southern shore of Lake Michigan, between Chicago and Detroit. During the past two decades, the area's once strong manufacturing base has been gradually eroding. Although the local economy is expanding and the region boasts an unemployment rate of only about 4%, job growth is primarily in the service sector. AM General, manufacturer of the *Humvee* all-terrain military vehicle, saw its contract business with the Department of Defense falling dramatically, and applied for federal assistance to support conversion.

Primary Goals

The project used Defense Conversion Adjustment (DCA) funds to support the efforts of AM General and its suppliers to become competitive in commercial markets, thereby averting lay-offs. By restructuring its workforce and training workers in high performance work organization (HPWO) skills, AM General sought to:

- Enhance its commercial base by increasing the production of the commercial *Hummer* for foreign and domestic sales.
- Diversify its existing defense business by developing programs for rebuilding, recycling, and refurbishing used military vehicles for resale.

Key Players

- **Workforce Development Services** — Official grantee and partner in the design and delivery of services.
- **AM General** — Partner with union in developing and implementing restructuring/retraining plans for AM General and eight regional suppliers.
- **United Auto Workers (UAW) Local 5** — Partner with firm in developing and implementing restructuring/retraining plans for AM General.
- **Sociotech** — Consulting firm that assisted in planning restructuring at AM General; also provided training to employees of AM General and employees of participating subcontractor firms.

Significant Outcomes

- 386 AM General employees and 200 employees of subcontractor firms trained in HPWO skills.
- AM General's commercial sales increased 22% in three years.
- AM General experienced increased efficiency and decreased costs in the production process as a result of implementing HPWO practices.
- Project exhibited a high degree of labor-management and public-private cooperation and coordination.
- At-risk workers transferred to firm's commercial and refurbishing divisions.

THE HUMMER PROJECT

South Bend, Indiana

THE CONTEXT

As the company that makes the Humvee—a lightweight military vehicle that has gained considerable notoriety in the last few years for its unusual capabilities—AM General Corporation has been a leader in the design, development, and production of military vehicles for over forty years. The company is based in South Bend, Indiana, a middle-sized town midway between Detroit and Chicago on the shores of Lake Michigan. In 1992, at the time the grant proposal was being written, AM General employed about 600 salaried workers and 1100 hourly workers division-wide: 900 hourly workers in South Bend and 200 in Indianapolis. The firm is one of the few major manufacturing employers remaining in an area that has experienced a sharp decline in manufacturing jobs in the last few decades.

By the early 1990s, the end of the Cold War and the defense drawdown became a hard-to-ignore reality for AM General. Defense sales, traditionally accounting for about 95% of the company's revenues, had been dropping steadily. The company saw that its survival depended on supplementing its military production with the production and sales of Hummers for the commercial market.[1] Potential markets for the Hummer include mining companies, the Forest Service, foreign governments, and private "enthusiasts." To retain the majority of its employees and to survive, AM General would need to build and sell at least 10 commercial Hummers and 15 military Humvees a day. While the company had long agreed that diversifying into the commercial market was a necessity, and had invested considerable resources in marketing and prototype development, momentum was slow until the Defense Conversion Adjustment (DCA) grant was awarded in November 1993.

AM General Corporation has several facilities located in and outside of South Bend. The main plant where the military Humvee is produced and where the majority of the shop floor workers are employed is the McKinnley Plant, located just outside South Bend. The new Commercial Building, employing about 60 workers, is located a few yards from the McKinnley Plant. This is where a few vehicles a day are transformed into custom-built commercial Hummers. Corporate Headquarters, housing most of corporate management and other salaried, administrative workers is located in downtown South Bend. Across town is another building, where used military trucks are torn down and rebuilt for the Department of Defense (DOD) in a new initiative to diversify within the defense market. This facility employs a few dozen employees. The company has several additional facilities outside South Bend, including one in Indianapolis and another in Livonia, Michigan.

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[1] The Humvee is the name given to the military version of the vehicle; the Hummer is the name given to the commercial version. The Hummer, available in several models, differs from the Humvee in a number of ways, including paint color and interior design.

Most of AM General's workers are hourly and work in unskilled or semi-skilled production jobs. Most are ill-prepared to find new employment if they are laid off. Indeed, in past layoffs AM General workers tended to wait to be called back rather than seek new employment. AM General workers are mostly male (81%) and white (88%). About half have a high school degree only and half have post-secondary training. The workforce is fairly old, with 60% over the age of 45. AM General workers earn more than their counterparts in other manufacturing contexts, due to their seniority and unionization. As many as three-quarters earn more than $13 an hour.

The impact of defense downsizing, planners knew, would extend well beyond AM General. The dozens of companies that supply AM General with parts and services would be affected, particularly those heavily dependent on this customer. Planners believed that assisting suppliers was a necessary component of supporting AM General's conversion strategy. Specifically, suppliers needed to learn how to become more flexible and responsive to meet AM General's changing needs as a commercial business. Part of the grant was therefore set aside to pay for training to supplier workers.

GOALS AND STRATEGIES

The overall goal of the Hummer Project is to avert layoffs by assisting AM General in its conversion and diversification efforts. To survive the declining defense market the company must, in the words of one of its Vice Presidents, "significantly change the organization and its culture from an ingrained military approach to a market-oriented approach that understands customer relationships and that is more efficient." The firm, with help from the DCA grant, is pursuing two distinct dislocation aversion strategies:

- ***Conversion***. The firm is seeking to increase production of commercial Hummers for foreign and domestic sales to replace work lost from cutbacks in Department of Defense contracts for military Humvees.

- ***Diversification within the military sector***. The firm is engaged in an initiative to produce recycled lightweight trucks, made by tearing down and rebuilding used vehicles. The rebuilt trucks, incorporating much of the original material, are sold back to the Department of Defense at approximately half the cost of a new vehicle.

The proposal lists the following nine specific objectives:

- Enrollment of 750 employees, from both AM General and its supplier firms, in the retraining program.

- Successful completion of the specific training components by 80% of the trainees.

- Transformation of the Humvee "worksphere" into a high-performance workplace via a highly consensual, participatory redesign process .

- Representation in the retraining program of employees from 25 of AM General's Humvee supplier firms.
- The production and sale of 3,200 Humvees per year to non-Department of Defense governmental and commercial customers, foreign and domestic.
- Decreases in manufacturing expenses, achieved by reducing tools/equipment breakage and replacement, scrap costs, etc.
- Reduction in the number of vehicle reworks/retrofits.
- Reduction in the dollar value of warranty work.
- Reduced number of job-related injuries.

KEY PLAYERS

The Hummer Project was the result of a close, four-way collaboration between some of the top management at AM General, the United Auto Workers local leadership, Workforce Development Services (WDS), the organization that operates local Job Training Partnership Act (JTPA) programs, and the service provider, a consulting firm called Sociotech.

Workforce Development Services (WDS). The administrative entity for one of Indiana's sixteen SDAs, WDS was the project grantee. WDS has a long history of service delivery through JTPA, including Title III and discretionary grants under Title III. In the past, WDS has provided rapid response services to laid off workers from AM General. The former Title III coordinator, the grant project director, played a central role in the design and delivery of services.

AM General. Several members of AM General's management made up the second organizational partner in the administration of the project. The president, a relative newcomer, was committed to the conversion and diversification of the company. The Human Resources Vice President led the company's efforts in training and restructuring with wholehearted support from other key managers.

United Auto Workers, Local 5. United Auto Workers (UAW) Local 5 and its president was the third key partner. The relationship between AM General management and the union began changing several years ago, when the company and the union together launched an experimental project to produce a new ambulance vehicle for the military. Workers took a much larger part in decision-making and problem-solving in the production of these vehicles and the project was considered to be an enormous success. The union's role helped to set a precedent for its current role in supporting the company's goal to become a high-performance workplace (HPWO).

Sociotech. A consulting firm, Sociotech was the sole service provider for the grant. Unfortunately, the president (who was intensely involved in the day-to-day activities of the grant) suddenly died halfway through the project. The company was then sold to another consulting firm, which took over Sociotech's role in the project. Sociotech specialized in implementing New Work Systems (another name for HPWOs).

THE IMPLEMENTATION EXPERIENCE

The Hummer Project started late, due to delays in negotiations between the union and AM General management, but once underway progressed steadily and completed on schedule. Described below are the highlights of the implementation experience.

RECRUITMENT AND SELECTION OF SUPPLIER FIRMS

AM General is the primary firm involved in this project, absorbing the majority of the grant's resources. In this section, we describe the process whereby AM General's suppliers were recruited for participation in the project.

The grant proposal states that workers from twenty-five supplier firms would receive communication and teamwork skills training. The selection of these firms from among the dozens of suppliers to AM General was a fairly long and consuming process, led by the Supplier Sub-Committee, consisting of AM General managers, the union, and WDS staff. Suppliers were informed of the grant within a few months of start-up, and invited to attend a one-day suppliers' conference in a South Bend hotel where they learned about the grant and filled out an application form. Finalists were selected according to criteria such as past performance, dependence on AM General, size, proximity to AM General, and commitment to training and the principles of high-performance workplaces. An additional criterion was whether the supplier would likely be, in the words of an AM General manager, "part of AM General's future."

CHARACTERISTICS OF SUPPLIER FIRMS

Nineteen suppliers expressed initial interest, and eight were selected. These eight suppliers were mostly manufacturers, but varied in size and their degree of dependency on AM General. The chart below identifies the firms and their size.

THE HUMMER PROJECT: PARTICIPATING SUPPLIER FIRMS

Name of Supplier	Number of Salaried Employees	Number of Hourly Employees	Percent Defense-Dependent
Aurora Cord and Cable	23	137	100%
Automated Metal Cal	4	11	25%
Curtis Products	50	200	10%
Electro Transfer Systems	15	138	50%
Krizman, International, Inc.	30	170	10%
Production Technology	4	6	50%
Well Aluminum	45	190	10%
Riverside Manufacturing	15	65	100%

SERVICES PROVIDED

AM GENERAL

The DCA grant helped to pay for two types of interventions at AM General. The first was intensive consulting to advise management and support the implementation of the reorganization of several divisions (or "reengineer" them, to use the words of the consultant) into high-performance workplaces. To become an HPWO, AM General needed a workforce more skilled in problem-solving, responsiveness to customers, leadership, and decision-making.

The second type of service paid for by the grant was several days worth of training in communication and teamwork skills to provide all affected workers with the skills needed to function at a high level in the radically different environment envisioned by the planners. Sociotech consultants worked directly with management to design and implement the reorganization of the firm, and the training was provided by Sociotech's staff or hired instructors.

The consultant began in each division by forming and training a Steering Committee, consisting of selected managers in that division. Then a Process Analysis Team (PAT), consisting of about five workers, was appointed by the Steering Committee (or in some cases nominated by the workers). The PAT typically met for several days with the consultant (an activity which is hard to designate as either training or consulting alone) to set goals and learn how to accomplish its tasks. Their work included conducting a survey of the needs and attitudes of the workers in their division, analyzing the results, mapping the work processes carried out in the division, and identifying waste or inefficiencies. In short, the work of the PAT was to describe "what is" and "what should be" in the work processes in their division. The theory behind using workers for this task was that they knew best how to identify ways to improve efficiency. Also, a worker-based PAT, it was thought, would increase the chances of widespread worker "buy-in" for the new system.

The results of the PAT's work were then passed on to the Steering Committee, which made recommendations to the Design Team. This process resulted in several layoffs in at least one division as the division tightened up and became more efficient. In all cases the work resulted in the development of functional teams to carry out revised work processes. This was the beginning of the transformation of the organization and culture of the division into a high-performance workplace.

Once these "design" phases were underway, the "implementation phase" began, kicked off with a two-day course in communication and teamwork skills, intended to prepare workers to function in self-directed teams. A manual containing topics such as communication basics, self-discovery, definitions of high-performance teams, stages of team development, and managing conflict was adapted for use by Sociotech and distributed to participating workers.

Ten divisions at AM General (some are grouped in the discussion below) underwent training and restructuring. Each division's experience varied in how smoothly steps were followed and in how much progress it was able to make in achieving its HPWO objectives by the time the grant ended. The following is a brief summary of what happened in several divisions.

- **Finance/MIS.** This administrative department employing mostly salaried (non-union) employees was the first to start and complete the process and was viewed as a "pilot project" by planners. The design work was completed in early fall of 1994. The PAT and Steering Committee generated suggestions about how to achieve their goals, such as reducing costs by 30% to 40%. Once teams were created and the workforce reduced (several workers were reassigned to other divisions within AM General and a few laid off) all employees received at least 16 hours of training. By the end of the grant in June of 1995, this division was smaller, reorganized into teams, and reducing costs. Interviews with staff indicated a high level of satisfaction with the changes.

- **Purchasing/Materials**. This division began its design work about six weeks after Finance/MIS. The seven member PAT worked for about 25 hours a week for several months on design recommendations. The group identified goals, including cost reductions of 30% and reorganizing the workforce into "performance teams." Training of workers was completed, but progress in this division was slower than in some of the others. The company seemed committed to making reengineering work here too, however, and devoted its own resources to supporting full implementation.

- **Extended Service Project (ESP)** . This is the new division making recycled lightweight trucks for the Department of Defense, as described above. It was the first manufacturing division at AM General to become team-based, but not without a few false starts. Progress was slowed by conflict between the workers and managers and difficulties with production. Employees were paid up to 40% less than their colleagues elsewhere in the company (their lower wages were negotiated with the union at the time AM General bid for the contract to compete against a non-union competitor). Training and restructuring had to be postponed when production pressures increased. For many months the situation was quite chaotic and tense with frustrated workers and managers alike. When a new manager with experience starting up team-based projects was assigned to the division, progress resumed and by the end of the grant the implementation was again in full swing. More trucks were being built that passed inspection, and workers were trained and functioning well in teams. ESP absorbed many workers "laid off" from the military division. The number of employees increased to 172 and was expected to go up to 190 by the end of 1995.

- **Commercial**. This division was housed in a separate building where the military Humvee was converted to the commercial Hummer. AM General workers considered Commercial to be a highly desirable division to work in. Management viewed this division's success in becoming an HPWO to be crucial to the company's plans to commercialize. In this positive environment, the PAT was established in October 1994, and worked full time for two months before submitting its recommendations to the Steering Committee. The PAT's work was, however, seriously disrupted by a major restructuring process that began during May 1995 with a precipitous reduction in the production of Humvees. Anticipated by everyone for months, the necessity of moving dozens of workers out of the military division into other divisions nevertheless played havoc with the project's activities. The massive "bumping" that occurred throughout the company (workers with high seniority "bumped" less senior workers, taking their jobs, who then bumped less senior workers in other divisions) directly undermined the fledgling teams that were just beginning to function. By the end of the summer the situation had stabilized, and work for the New Work Systems in Commercial resumed.

THE SUPPLIERS

Each of the eight participating suppliers was offered about 16 hours of training in communication and teamwork skills per worker, identical to that received by AM General workers. However, the project did not pay for consultant time to help management restructure the workplace, as it did at AM General. A total of 210 employees received 16 hours of training in communication and teamwork skills.

The experience of the suppliers in the project was mixed. Several supplier managers felt that the training offered was too brief, too generic, and not extremely relevant to improving their relationship with their customer, AM General. As the cases below illustrate, supplier management did not regret the experience, but expressed some disappointment that they had so little influence over the curriculum.

- **Krizman International, Inc.** Krizman International produces steering and suspension parts, ball joints, and steering linkages for the Humvee. The company employs about 200 employees in a manufacturing plant just outside South Bend. About 10% of their business is with AM General. This company has a strong commitment to workforce training. Their decision to participate was also driven by their commitment to strengthening their "partnership" with AM General. While some managers complained that the training the employees had received in team-building and communication skills met neither the company's needs nor AM General's needs, they conceded that their participation had successfully signaled their determination to be "part of AM General's future" and was therefore worth the resources and effort devoted to it.

- **Automated Metal Cal (AMC).** AMC is a small firm located a few blocks from AM General. It employs 16 workers who make metal labels for the vehicle. At the start of the grant AMC was about 20% dependent on AM General and actively looking to expand in the commercial markets. The company had no experience in training, but wanted to strengthen its ties to AM General. The CEO, however, worried that 16 hours of training was too much since it required pulling everyone off the shopfloor and shutting down production. His attempts to get training more customized to his needs failed. Not all of the workers ended up training for this reason (eight instead of the planned 12). The training was delivered at AM General, which was considered very beneficial, and included a tour of the plant. During this tour, one AMC worker spoke with an AM General worker, and an idea for improvement was hatched. The AM General worker told the AMC worker that it would be much more efficient if the labels sent over by AMC could be packaged in groups of 25 rather than 50. This idea was later proposed to AMC management and accepted. Another important outcome of the training for AMC was that the employer applied some of the ideas he learned about teamwork, and decided to reorganize workers into "pods," each one having responsibility for certain customers.

PROJECT OUTCOMES

Overall, the Hummer project either met or exceeded most of its own objectives, as is shown in the chart below. Although the proposal did not explicitly identify preventing layoffs as an objective, most of the involved players would agree that preventing layoffs was the ultimate goal of the project. Despite the relatively short time span of the project, it became evident that massive layoffs had been avoided. In fact, the net loss of jobs at AM General between the two years prior to the grant and the end of the grant was only 13. This is an impressive achievement, considering that Humvee sales plummeted throughout the period, most dramatically during the spring of 1995.

THE HUMMER PROJECT
PROJECT OUTCOMES IN RELATION TO OBJECTIVES

Objectives	Outcomes
Enrollment of 750 employees from both AM General and its supplier firms in the retraining program.	Objective partly met. A total of 609 workers were trained (386 AM General employees and 223 supplier employees).
Successful completion of the specific training components by 80% of the trainees.	Objective met. 100% of participating AM General workers completed training. Close to 90% of supplier employees completed training.
Transformation of the Humvee "worksphere" into a high-performance workplace via a highly consensual, participatory redesign process.	Eight divisions at AM General completed restructuring design work and are in various stages of implementing plans to convert to an HPWO. It was less clear that training helped suppliers become stronger "team players" with AM General.
The production and sale of 3,200 Hummers per year to non-Department of Defense governmental and commercial customers, foreign and domestic.	Objective partly met. Direct international and commercial sales increased 22% from the previous 12 months before the grant started. By October 1995 production of Hummers had increased by five times compared to the previous year: from five to 25 a day.
Decreases in manufacturing expenses, achieved by reducing tools/equipment breakage and replacement, scrap costs, etc.	Objective met. Plant-wide decreases in manufacturing expenses of 2%, while experiencing a 10% gain in productivity.
Representation in the retraining program of employees from 25 of AM General's Hummers supplier firms.	Objective not met. Only eight suppliers participated.
Reduction in the number of vehicle reworks/retrofits.	Objective partly met. At the Extended Service Project a 43% reduction in defects per unit.

SUMMARY COMMENTS

This was a very successful dislocation aversion project. Although not listed as a specific objective by the project, the grant fueled a process that appears to have prevented the layoff of dozens, if not hundreds, of individual workers at AM General. Further, it is unlikely these workers would have easily found employment in the area, due to their high pay expectations, low skill and educational levels, and union membership. Top managers, union leaders, the consultants and the

Service Delivery Area (SDA) agreed that without the DCA grant acting as a catalyst, the plans to convert, diversify, and reorganize into a high-performance workplace would not have been realized in time to cushion the impact of radically reduced demand for the military Humvee. Specifically, the factors underlying the successes enjoyed by the people and firms participating in this project included:

- ***Strong collaboration between the firm and the union, brought about and maintained by a dedicated and talented project administrator.*** The changes taking place at AM General could not have occurred without participation by a strong but cooperative union, led by a charismatic and forward-thinking chair of the Bargaining Committee dedicated to the idea that training was a necessary component in AM General's survival strategy. Equally vital was the leadership and dedication of the former Title III coordinator who managed the project. Top managers at AM General, particularly the President, Human Resources and Quality Vice Presidents, were pivotal in designing and operating the project and maintaining its momentum when things got rough.

- ***A strong link between corporate goals and workforce training.*** The company's goals—to become a high-performance workplace, flatten its hierarchy, and shed the nonproductive characteristics of a defense firm unaccustomed to competing in the private market—directly drove the training and consulting services provided to the workers and managers. Indeed, the activities were so interdependent that one could not be imagined without the other.

- ***A unique and marketable commercial product.*** The commercial Hummer is a unique product with virtually no competition, and for which there appears to be a significant market niche. If the company can drive down the price of the Hummer and succeed in attracting customers, increasing commercial sales has a high likelihood of success, according to the consultant and other observers.

- ***The concept of supplier partnership.*** Although the project had difficulty putting into practice the idea of building a partnership between the suppliers and AM General, the concept remains both innovative and promising.

- ***The choice of AM General.*** AM General may have been an ideal firm for the kind of intervention that was planned and implemented in this project: ripe for outside intervention but unlikely to have embraced many of the painful changes that were necessary without it. A typical defense contractor, the company's culture was deeply single-customer oriented, rigid and hierarchical. The changes that were required to transform this culture into one that fostered flexible, customer-oriented, efficient ways of working were fundamental and enormously difficult to achieve without outside help. Second, the company was ready to change: the commitment of top management was won, manager by manager, and grew steadily as the DCA grant got underway. Within ten months every key executive seemed to be fully on board, with attitudes that had changed from sometimes dubious skepticism to a recognition that conversion and change was the only viable path. Third, the "reaper was at the door." The very survival of this 50-year-old company was at stake, including thousands of jobs. Fourth, while the company had clearly started down the conversion path in the early 1990s, it had faltered somewhat and lost momentum. The DCA grant seemed to galvanize the company into action, although the grant itself was only a "drop in the bucket" of resources needed to implement the plans. Finally, this company's union had a strong, progressive leader who pursued the goal of conversion while maintaining the trust and respect of both management and rank and file during the crucial first year of the project.

- ***A partnership between government, business and labor.*** This project demonstrated the possibility of a successful partnership between government, business, and labor. Each partner brought to the relationship a unique set of needs, strengths, and obstacles. Yet they were able to agree on a common goal, and despite a multitude of challenges along the way, work steadily together to achieve that goal.

The Hummer Project learned some lessons about what not to do, as well as what to do. Some of these included:

- Do not neglect the need for occupational skills upgrading as well as training in HPWO skills such as communication and teamwork skills. A weakness of this project may turn out to be that no resources were set aside to provide technical or occupational skills upgrading of workers involved in the commercial and ESP divisions. This issue had been debated during the design stage of the project, but planners ultimately decided that "soft skills" were the priority for a high performance workplace. However, some divisions are clearly less productive than they could be due to inadequate technical skills among many workers.

- Do not spread resources too thinly. In retrospect, some planners believed that attempting to not only "turn around" AM General, but also as many as 25 suppliers, was overly ambitious for the resources and time that were available.

- Allow firms to participate in planning to increase their "ownership" of the planned activities. Although at one point a supplier representative was invited to joint the Design Team, this attempt to involve suppliers in the planning quickly dissolved. Suppliers were provided with only 16 hours of a relatively "canned" course in communication and teamwork skills training and received no assistance in reorganization. Some of the suppliers were somewhat disappointed in both the intensity and content of these courses, and argued that the training did not match their training needs very well.

- Emphasize marketing. At times the marketing efforts of the firm seemed not to be keeping pace with the rest of the firm in gearing up for conversion. Although the DCA grant did not include expanding the marketing efforts of the firm, participants came to recognize that unless marketing improved, none of the other changes would matter.

- The union and management need to seek creative new ways of working together. The role of the union in this project was experienced as a "double-edged sword." On the one hand, changes could not have occurred without strong, creative, and determined leadership and members. On the other hand, the company's ability to become a commercial firm, responsive, competitive, and flexible, was limited by agreements with the union regarding such matters as seniority rules and wages. AM General and the union worked out many unprecedented agreements in their common effort to become an HPWO and save jobs, but encountered many challenges along the way.

FACT SHEET: DEMONSTRATION PROJECT

THE INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS (IAM)

Project Location	Burbank, CA	*Grantee*	IAM Lodge 727
Type of Approach	Combined Dislocation Aversion and Worker Mobility	*Project Administrator*	Verdugo County Private Industry Council (PIC)
Period Covered by Grant	November 1992–December 1995	*Key Contact(s)*	Dan Nakamoto, Research Director, IAM Lodge 727
Grant Amount	$500,000	*Geographic Area*	Southern CA

Context

The economy of the State of California has absorbed a significant proportion of the reductions in national defense spending since 1988. Much of the resulting job loss has been concentrated in southern California, home to several major defense-dependent aerospace firms. Between 1987 and 1991, 20% of the region's 375,000 aerospace jobs were eliminated. In the context of the nationwide shift away from heavy manufacturing that had already caused disruption in the local economy, planners realized that it was unlikely that dislocated aerospace workers would be reemployed in comparable jobs without substantial training.

Primary Goals

The IAM project was first conceived as an effort to train dislocated workers for new jobs in the growing advanced transportation industry, particularly in prototype development for electric vehicles. After it became apparent that these jobs were not yet available, the project focused on providing training to dislocated workers in job-search and basic skills, and helping defense firms preserve jobs by converting to commercial markets. The project sought to:

- Place trained dislocated defense workers in jobs with local composites manufacturers.
- Train at-risk workers in skills that would support their firms' conversion to commercial markets and enable them to retain their jobs.

Key Players

- **IAM Lodge 727** — Formal grantee and coordinator; recruited firms for participation in project.
- **Verdugo County PIC** — Primary fiscal administrator; recruited participants from its Title III programs and provided basic readjustment and supportive services.
- **Service Providers** — Specialists from California State University at Los Angeles and Glendale Community College served as consultants in the design and delivery of training and the development of conversion strategies.

Significant Outcomes

- Some dislocated workers were placed in new jobs through the projects, but the jobs were frequently unrelated to their training.
- The level of private sector participation was disappointing, but two enrolled firms were able to retain their workforces through the life of the project; one of these began hiring new workers.

INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS DEFENSE CONVERSION ADJUSTMENT DEMONSTRATION

Burbank, California

THE CONTEXT

Until the late 1980s, Los Angeles was one of the nation's most productive regions in defense aerospace manufacturing. At its peak, 80% of California's 375,000 aerospace jobs were located in the region. When layoffs associated with defense cutbacks hit aerospace firms, southern California's economy was seriously affected. Between 1987 and 1991, aerospace employment in Los Angeles dropped by over 20% (compared to a national drop of 11% over the same period). The International Association of Machinists and Aerospace Workers (IAM), headquartered in Burbank, California, was watching the mass layoffs with concern for the current jobs and future employment opportunities of its members. As a result of reductions in defense contracting, nearby Lockheed laid off 8,000 workers, and McDonnell Douglas cut 2,000 employees from its rolls, many of whom were IAM members. Recent estimates indicate that the region's job losses in aerospace may reach 200,000 or over 50% of its 1987 employment levels.

The reductions in defense-related employment constituted only one of a series of setbacks for the region. The sheer number of workers laid off from aerospace manufacturing only exacerbated the effects of the structural transformation from heavy industry to services that was occurring even before defense cutbacks. Further, much of the military and commercial manufacturing that might have provided replacement jobs to impacted defense workers moved to other states or countries. Throughout the Los Angeles basin, unemployment soared to nearly 10% and hovered there until 1994, when it declined to around 8%. Despite the mass layoffs in aerospace, the Los Angeles area's economy has been steadily recovering since 1994. Although much of the manufacturing base is gone, L.A. has a steadily growing economy of small companies involved in high technology and services. Entertainment, computer software, multimedia production, finance and trade are all growth industries. Unfortunately, the skill mismatch between these occupations and the skills of dislocated defense workers is extreme. Without extensive training, dislocated workers are not likely to find jobs with adequate pay and benefits.

GOALS AND STRATEGIES

The demonstration was initiated by IAM District 727 and planned with the Verdugo County Private Industry Council. The union operated its own transition assistance center for dislocated union members and had worked with the Verdugo County Private Industry Council (PIC) to respond to layoffs at Lockheed, McDonnell Douglas, and elsewhere. IAM was very concerned about the plight of dislocated defense workers, because the union was unable to find replacement jobs for them. The key challenge to placement for dislocated production workers was the lack of job growth in manufacturing. As the IAM planner summed it up, "[W]e could no longer just sit back. We had to be creative and look for avenues of job creation." The union was working closely with an initiative called CALSTART to develop electronic vehicles as a growth industry for California. Union planners hoped to design the project around CALSTART and its small business "incubators" to generate training and jobs for workers dislocated from nearby aerospace companies.

IAM's original worker mobility project strategy and goals changed substantially about a year into the grant period. The original innovative design was to provide training for nearly 300 dislocated aerospace workers who would be employed by new, high-tech firms in prototype development for the advanced transportation industry. Training would benefit both the new firms and workers by emphasizing High Performance Work Organization (HPWO) skills and highly specialized skills in composite manufacturing, which were needed to develop low-polluting, alternative fuel vehicles. Production of these vehicles was needed to help California achieve low emission standards. Unfortunately, implementation of the federal emission standards was postponed, causing delays in research, production, and financing for CALSTART and its affiliates. Faced with delays in the development of new jobs in the advanced transportation industry, IAM amended the demonstration's approach to include a combination of worker mobility and dislocation aversion strategies, with dislocation aversion receiving more emphasis. The number of participants that the project hoped to train was also adjusted downward, to between 100 and 300 at-risk or dislocated workers.

The overall mission of the IAM demonstration was to change the culture of production at participating firms, promoting efficiency and increasing effectiveness by training newly hired dislocated defense workers or existing employees of defense-dependent firms in commercial production techniques and HPWO skills. The project's key objectives were to (1) employ dislocated defense workers and (2) keep at-risk defense industry workers on the job by helping firms succeed in the commercial marketplace. These objectives were to be accomplished by supporting workforce training that complemented firms' transition strategies. IAM specified seven outcomes from worker training necessary for producing a cultural transformation to commercial production:

- Trainees will be qualified to organize consumer-driven production;
- Trainees will be qualified to use whatever technology is needed to build innovative prototypes;
- Trainees will be qualified to use data and information to help companies achieve their goals;
- Skills acquired by trainees will be portable -- usable in a number of work contexts;
- Labor agreements with participating firms will encourage portable employee benefits;
- Trainees will be inspired to improve productivity and quality in exchange for job security;
- Trainees will be wholly familiar with information systems, including cost analysis, that enhance manufacturing competitiveness.

KEY PLAYERS

Key players in this project included: (1) the International Association of Machinists (IAM), (2) the Verdugo County Private Industry Council, (3) the individual firms recruited to participate in the project, and (4) training consultants from two local universities.

International Association of Machinists (IAM) Lodge 727 was the demonstration grantee and was instrumental in designing and implementing the project. IAM staff oversaw the day-to-day operations of the demonstration and had the primary responsibility for recruiting firms and arranging for educational institutions to provide management consulting assistance to firms in transition as well as training to at-risk and dislocated workers. Once among the most powerful union organizations in the country, IAM's membership declined sharply as a result of the losses in aerospace manufacturing and reduced defense spending. Members of the local lodge were among the 10,000 Lockheed and McDonnell Douglas workers laid off between 1990 and 1993. IAM continued to operate a job assistance center for union members and had previously worked closely with the Verdugo County PIC to respond to layoffs and provide assistance to dislocated union workers.

The Verdugo County Private Industry Council served as the administrative entity for the project, with responsibility for documenting participant eligibility, tracking participants, and providing fiscal management and oversight. In addition, Verdugo County PIC helped select dislocated workers (from its pool of Title III enrollees) for demonstration activities and was available to provide basic readjustment and supportive services to dislocated workers using Title III funds. The chair of Verdugo County PIC's Labor Management Committee also advised IAM and participating firms on demonstration activities.

Local universities also helped provide training to firms and workers. As IAM expanded its demonstration to include at-risk firms, it realized that industry experts in commercial production and training were needed. This was particularly true for smaller firms that required help developing strategic plans for transition and coherent plans to train workers. Consultants in industrial technology and training were added to the project team from the engineering department of **California State University at Los Angeles (CSLA)** and **Glendale Community College's Professional Development Center**. Depending on firm needs, consultants assisted managers to develop strategies for transition; designed, conducted, and oversaw training for employees; and monitored progress in implementing plans for transition.

THE IMPLEMENTATION EXPERIENCE

Throughout the project, progress in achieving IAM's goals was slow and characterized by many disappointments and the need for fresh starts. After the project's first eighteen months, despite many different efforts to recruit firms and begin training, only one firm had started training for at-risk workers. The project received DCA grant extensions to continue operations through September, 1995. During the last year of the project, two additional firms started training, including one serving dislocated workers.

WORKER MOBILITY APPROACH

This section of the profile describes the project's efforts to train dislocated workers for jobs in industries that fabricate products using composite materials.

RECRUITMENT AND SELECTION OF FIRMS

The original firms targeted for the demonstration were start-up firms in the CALSTART initiative that could use dislocated defense production workers and engineers with relevant prototype development and manufacturing experience to help develop electric vehicle prototypes. When the CALSTART strategy stalled, IAM had to develop a new strategy for recruiting firms. Although much of the project's energy was transferred to the search for defense-dependent firms interested in conversion, the project continued to search for individual firms in the CALSTART consortium that offered some promise of placing dislocated defense workers. IAM looked favorably on firms that offered the potential for leveraging additional public funds from other sources. Ultimately, only one start-up firm within the CALSTART consortium participated in the project.

Throughout the project, staff worked closely with Hub Engineering, a small start-up company formed by two former defense industry engineers who developed an automated manufacturing system for composites. These individuals planned to apply their specialized manufacturing process to production of components for electric vehicles, where it had the potential to reduce manufacturing costs. The firm wanted to train and hire about 40 dislocated defense workers under the demonstration. At the time the firm entered the demonstration, it did not yet have production orders or a facility ready for training and production. The firm applied for funding from a number of sources that never materialized. As a result of lack of funding to develop its own processes for electric vehicles, Hub Engineering modified its training program for dislocated workers.

The company instead would provide trained workers with experience in composite manufacturing to employers that use these processes in commercial industries. While it was hoped that these companies would hire workers after training, neither Hub Engineering nor IAM knew much about the demand for workers in composite manufacturing. Hub Engineering identified a cluster of 28 companies that use composites in manufacturing, including firms producing medical equipment, aircraft parts, sporting goods, and boats. Many of these companies offered guidance about training curricula and agreed to consider trainees for jobs.

RECRUITMENT AND SELECTION OF WORKERS

Hub Engineering targeted dislocated defense workers with composite materials manufacturing experience. The company sought the most motivated and experienced workers from the applicant pool and worked with Verdugo County PIC, the Employment Service, and the union to identify qualified dislocated workers. Many of the potential participants came from layoff lists maintained by these organizations. The company sent letters to laid-off members of the IAM and sent flyers to PIC, Employment Service, and union offices about the special training program. About 200 people with some experience in composite manufacturing were identified, and Hub Engineering interviewed nearly 50 people to assess their readiness for the training program. The company found that many potential participants had been out of work for several years, often in stop-gap jobs unrelated to their manufacturing experience. The project selected 15 participants for the first round of training and planned to provide training to a total of 40 to 50 dislocated workers.

SERVICES PROVIDED TO WORKERS

Hub Engineering designed training to provide a three-course sequence of instruction for improving workers' manufacturing skills in industries that use composites. Training included (1) composite manufacturing, (2) concurrent engineering, and (3) computer literacy. Trainees attended classes for five hours, five days a week for four weeks. Companies identified by Hub Engineering were informed about the training program and contacted about job openings for participants once they completed training.

Trainees were also coenrolled in Verdugo PIC's Economic Dislocation and Worker Adjustment Assistance Act (EDWAA) program. They were eligible to receive additional basic readjustment services, including career counseling, job search assistance, supportive services, and help with placement, if needed. Project staff noted that Verdugo PIC was particularly helpful in providing current information about job openings that might be appropriate for trainees.

Results from the first round of training at Hub Engineering were quite disappointing. Placing participants was a very slow, painstaking process. The relationship that the company developed with other composite manufacturing firms netted few jobs for the trainees. Many of these companies provided inadequate wages, benefits, or poor working conditions for their employees. Those that Hub Engineering found to be appropriate for dislocated workers typically had no job openings. The project eventually found new jobs for about two-thirds of the first group, but it was not clear to what extent the training they received helped these participants. Thus, after all of the effort to enhance the skills of dislocated workers, the project found that there was little demand for highly skilled workers in composite fabrication.

Placement was not the only weakness of this training design. The training curricula did not address workers' specific needs. Workers recruited into training had been laid off from their jobs for several years and typically needed help with job search and interviewing skills as well as enhanced technical skills. Staff discovered that some workers simply couldn't express themselves during interviews or had trouble writing effective resumes. There were problems with the technical courses as well. The computer course, for example, was taught on personal computers rather than on the computer-numerical-control (CNC) interfaces typically used in manufacturing. Training also failed to provide participants with the level of computer machining skills that employers required.

IAM responded to these poor results by redesigning services to better meet the needs of the nearly 30 dislocated workers who were still scheduled to receive training. A new program called the Open Architecture Project was developed. It differed fundamentally from the original Hub Engineering design in that it provided readjustment assistance that participants needed. In addition, the curriculum was redesigned to increase the CNC machining content. First, the project offered participants the option of enrolling in an introductory computer machining course at a local community college. Next, the IAM hired two readjustment counselors to help provide one-on-one counseling, job search training, and job development for trainees. Third, IAM required all participants to attend an interviewing skills seminar that included substantial coaching. And finally, Hub developed a series of job seminars that featured people with knowledge of employment opportunities for machinists in specific industries, such as aerospace, biomedical equipment, sporting goods, and high-tech manufacturing.

Although the Open Architecture Project improved readjustment services and provided more relevant technical skills, preliminary information suggests that placement for the second group of participants continued to be difficult despite the program enhancements.

THE DISLOCATION AVERSION APPROACH

This section of the profile describes the project's activities to prevent layoffs by assisting three defense-dependent firms with conversion and providing workforce training to support these efforts.

RECRUITMENT AND SELECTION OF FIRMS

To recruit defense-dependent firms interested in conversion, IAM relied heavily on existing relationships with companies employing IAM members. The project staff recruited only those defense firms with IAM representation. Among these firms, the project wanted those that demonstrated: (1) good labor-management relationships and (2) a commitment to involving the workforce in designing and implementing training. Participating firms needed to be in the defense industry and at-risk of laying off workers. IAM generally wanted to find firms that offered some hope for successful transition to or expansion of commercial markets. As with the firms involved in the worker mobility approach, they also looked for firms that had the potential to leverage additional public funds through other federal or state grants, to increase the scope of any job retention efforts.

CHARACTERISTICS OF PARTICIPATING FIRMS

The table below presents the three Los Angeles area firms that received DCA-funded training. As a result of IAM's selection process, the three firms recruited for the project employed IAM members and had generally good working relationships between management and union staff. All of the recruited companies had experienced layoffs shortly before joining the demonstration. Otherwise, each of these firms is very different in terms of its size, stage reached in the defense conversion process, and level and types of assistance needed to support conversion plans.

THE IAM PROJECT
PARTICIPATING FIRMS

Name of Firm	Number of Employees	Product Description
Air Transport Manufacturing	20	Military hardware: brackets, braces, housing for electronic components.
HR Textron	737	High-precision servo control valves and assemblies for aircraft.
WesTech Gear Corporation	164	Large, high-precision gears, engine reduction equipment, and pipe tensioning rigs.

The smallest firm was totally dependent on defense and had only a year's backlog of work remaining at the time it entered the demonstration. The firm's production facility used out-of-date machines and manufacturing methods. This firm also had little experience with financial planning, record keeping, or scheduling shipments and deliveries. Thus, this firm had extensive transition needs, including management assistance to develop a strategy for conversion, employee retraining, and substantial facility upgrades.

In contrast, management at the two medium-sized firms was actively involved in planning for the higher volume production needed in commercial industry. These firms had developed substantial commercial business, although the majority of sales for both was in defense. Both employed modern manufacturing technology and processes and both were committed to investing in technological upgrades to improve work efficiency.

SERVICES PROVIDED TO FIRMS

The broad mission of the IAM project was to produce widespread cultural changes to support high performance work organization skills among all companies participating in the demonstration. Therefore, IAM's preferred training approach was to target instruction to all production-line employees. In addition, managers and supervisors were encouraged to attend training on the importance of HPWO and teamwork skills. Additional training in support of individual firm transition needs was targeted to appropriate workers at each firm.

To assist participating firms that needed help with their conversion plans prior to training, IAM paid for a broad range of management consulting services, including: (1) an assessment of the company's capacity to diversify; (2) assistance developing strategies for conversion; (3) an assessment of workers' skill needs; (4) assistance planning and developing curricula for workforce training; and (5) follow-up guidance after training was completed. IAM obtained the help of industrial consultants and educators at California State University, Los Angeles and Glendale Community College to provide management assistance to the participating firms and to provide instruction in HPWO skills. Each institution had the capacity to provide individual consulting and instruction to managers on developing strategic plans for conversion, as well as curricula and instruction in high performance workplace skills, and skills needed for technological upgrades.

The participating firms needed varying amounts of management assistance, depending on the extent to which they had already completed strategic planning for conversion. Air Transport Manufacturing required extensive consulting services to identify its conversion and training needs. An industrial consultant from California State University, Los Angeles provided information on strategies for conversion, assessed the facility's need for modernization, and provided one-on-one management training. The consultant found that the firm needed extensive assistance in planning for technological upgrades; therefore, the university's Manufacturing Technology Center was recruited to help assess its manufacturing capacity and needs and assist with upgrading and training workers on new, computerized, equipment. In contrast, HR Textron and WesTech were much further along in their strategic planning. HR Textron, in particular, had already made substantial progress in its own transition planning and initiated the effort to recruit its supplier firms to help them plan for conversion. The project provided some consulting services to these firms to select appropriate training curricula and develop a suitable instructional design.

SERVICES PROVIDED TO WORKERS

The core training envisioned by IAM to support the transition goals of these firms was training in high performance workplace organization and teamwork skills. The project requested that each firm address a similar range of training issues, including:

- Consumer-driven production.
- Innovative production, including prototype building and problem solving.
- Data analysis to solve problems.
- Information systems skills.
- Development of flexible skills, and the ability to shift readily from one task to the next.
- Efficiency of labor and management interactions, thereby reducing the cost of components and the cost of production.
- Understanding the linkages between improved productivity, quality and job security.

Few of the participating firms, however, integrated all of these concepts into a cohesive instructional design. The experience of delivering training to at-risk workers is described for each firm below.

Air Transport Manufacturing. After joining the demonstration, Air Transport Manufacturing received assistance from an industrial consultant at California State University, Los Angeles on strategies for conversion to commercial markets, including the need for facility modernization, management training in commercial practices, and workforce training. The consultant helped the firm plan for a math/blueprint reading course for its workers, as a first workforce training activity. However, just as the blueprint reading course was about to begin, the firm had a financial crisis: its major defense-related contract, accounting for over 40% of its overall business, was cancelled.

In reacting to this crisis, the firm's president laid off some workers without notifying IAM first. Distressed by this action, IAM did not feel able to continue working with the company. Manufacturing was terminated from the demonstration. Although friction between the company management and the union exacerbated this difficult situation, it is not clear whether Air Transport Manufacturing could have been a successful participant in the demonstration, given the serious conversion challenges it faced.

The key lesson IAM staff learned from its experience with this firm was that it needed a more thorough and explicit assessment of whether firms were ready to participate. The consultant acknowledged that working with such a small firm was risky. At the time it entered the demonstration, the company had no business systems in place that might have been used to analyze finances or to schedule product shipments. Production facilities and methods were also outdated. Most tellingly, the company perceived workforce training as an expense, and never demonstrated that it was willing to invest in its workers. The company, as the consultant saw it, was a small "job shop"; as long as it had work, there was no incentive to change.

HR Textron. HR Textron came the closest to implementing an integrated training design as envisioned by IAM. The firm was very active in working with consultants to develop a training curriculum that not only was to be used for its own employees, but was also planned for use by employees of supplier firms. This training curriculum included four courses: (1) worker empowerment; (2) just-in-time manufacturing; (3) commercial product quality; and (4) concurrent engineering. Workers were to receive 50 hours of instruction and agreed to a 50/50 arrangement in which the company would pay workers for half of the time off for training if workers volunteered to work additional hours to cover the other half of time off for training.

HR Textron's training was planned in two phases to accommodate a quasi-experimental design and to pilot-test the training for the rest of HR Textron and its supplier firms. A first group of approximately 113 HR Textron workers, supervisors and managers from one division (the servo valve assembly division) was scheduled to receive training in the four areas described above. Their performance was benchmarked and compared to that of workers in other divisions who were not scheduled for training. The firm planned to use the results to refine the training design for the rest of the company's 700-plus workers as well as workers from other supplier firms.

Training at HR Textron got off to a quick start, facilitated by new management hired to lead the work of the pilot division. Between February and June 1994, HR Textron completed the worker empowerment and just-in-time manufacturing courses for its pilot division. As part of the training, workers took on greater responsibility for managing and completing their jobs; supervisors and managers were given new roles as facilitators; and a culture of teamwork began to develop in the pilot division. Anecdotal reports from workers and managers about greater enthusiasm and cooperation was backed by preliminary data that indicated the pilot division's productivity had increased by twenty percent. Managers at HR Textron credited the performance of the servo valve division with providing the competitive edge needed to win new contracts.

A series of delays and management changes, however, ended training at HR Textron before it was completed. While management was pleased at the increase in business and attributed the increase in sales to its new reputation for getting work done efficiently, training had to be interrupted until enough new workers could be hired to allow others to attend training. Training was further delayed due to contract negotiations with the union. IAM staff felt they could not support workforce training while they were in the midst of negotiations with management. Finally, the top managers who supported training and invested heavily in altering the production culture for the servo group were promoted and transferred from the Los Angeles site to the parent corporation in Delaware. New managers supported more traditional production approaches and decided not to continue the training project.

The changes at HR Textron were not without costs. Strong resistance to the new production design in the servo valve division was demonstrated by middle-level managers who felt threatened by the changes. Many did not support the pilot division, even though production had increased and workers showed greater enthusiasm on the job. IAM staff attributed new management's decision to stop the project to resistance from middle-level managers.

WesTech Gear Corporation. WesTech was preparing its workers to qualify as an ISO 9000 company, which would help the firm introduce products in Europe. The company planned a two-pronged approach to diversification: invest in new technologies to improve the efficiency of production, and invest in worker training so workers can learn faster and adapt to new work processes. An internal worker-management committee reviewed workers' skills and company needs and found that many workers needed better language skills to communicate effectively, improved math skills and enhanced technical skills. IAM assisted the company to develop training capabilities by purchasing computer learning labs and software to support the company's training needs.

Approximately 30 employees took advantage of training at the on-site learning center. Employees were given two hours each month of paid time off for training and asked to volunteer an additional hour of work for one of these hours. All had to complete core training modules in math, English, geometric dimensioning and tolerancing before moving on to learn additional technical subjects. The pace of training was slow for many participants. The time provided for training was relatively short, so many participants attended before or after their shifts. Yet some workers were often too tired from working overtime to take any additional time for training.

Training at WesTech started late in the demonstration. Although few participants had completed the core coursework by the end of the project, the facilities continued to experience a high volume of use, and workers continued to progress towards completing their courses when the project ended.

OUTCOMES

The project's immediate goals were to provide training for between 100 and 300 workers and place dislocated union workers or retain at-risk union workers in their jobs. IAM hoped to accomplish these goals by fundamentally changing the culture of production at firms, as indicated by specific training outcomes. Overall, the project was unable to achieve its goals. Training for at-risk workers was incomplete at all of the participating firms. It was unclear whether the training provided to dislocated workers was relevant for the jobs that participants obtained. These objectives and their outcomes are summarized in the following table.

THE INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS (IAM) PROJECT

PROJECT OUTCOMES IN RELATION TO OBJECTIVES

Objectives	Outcomes
Short-Term Project Objectives	
• Place dislocated defense workers in new or existing innovative non-defense firms.	• Objective partially met. Between 40-50 workers received training. Number of placements unknown.
• Keep at-risk defense workers employed by helping firms diversify into commercial production.	• Objective partially met. Layoffs stopped at two firms and one of these firms began hiring workers again. A third firm was terminated from the project after it laid off workers while receiving demonstration services.
Long-term Project Objectives	
• Trainees qualified to organize consumer-driven production. • Trainees qualified to use whatever technology is needed to build innovative prototypes. • Trainees qualified to use data and information to help companies achieve their goals. • Skills acquired by trainees usable in a number of work contexts. • Labor agreements with participating firms to encourage portable employee benefits. • Trainees inspired to improve productivity and quality in exchange for job security. • Trainees wholly familiar with information systems, including cost analysis, that enhance manufacturing competitiveness.	• It was unclear to what extent, if any, these long-term training objectives were met. The project collected insufficient information about workers' skill gains and the impact of these gains on productivity. • Preliminary information from HR Textron indicated many of these objectives were on their way to being met when the training was abruptly halted. Training gains, however, may have been reversed with the decision not to continue the training. • Workforce training at WesTech Gear was at a very early stage and focused on giving workers the skills they needed to begin addressing workplace efficiency and productivity. Thus, training had not yet fully integrated these objectives at the time the project ended.

SUMMARY COMMENTS

This union-led project experienced substantial difficulty in starting up and completing training projects. However, it showed remarkable adaptability and an ability to evolve in response to uncertainty and change. Highlights of this experience include the following:

- ***IAM's initial design for linking dislocated defense workers to an emerging growth industry was highly innovative***. The electric car industry appeared to be a good match for the transferable skills of dislocated defense aerospace engineers and production workers. Unfortunately, this strategy was not successful, due to the absence of new jobs in the targeted industry. Thus, the IAM project's approach evolved out of necessity into training for both at-risk and dislocated union workers.

- ***The flexible IAM approach to dislocation aversion allowed the project to recruit and serve firms at very different stages in the conversion process.*** Firms that needed management assistance with strategic planning for conversion were able to receive help in this area. Firms that were ready for workforce training could proceed directly to training. Yet at the same time, the project needed to more thoroughly assess firms' readiness for participation. The project's greatest opportunities for success occurred with firms that already had clear conversion strategies.

- ***Disappointments and delays in the project were caused when firms interested in participating failed to receive other grants with which IAM planned to leverage project activities.*** Thus, although IAM tried to leverage other funds to increase the scope of its project, this strategy had the unintended effect of repeatedly delaying implementation of the DCA demonstration project. The large-scale research and development funding for the electric car industry to support the CALSTART consortium did not materialize when expected and Hub Engineering failed to win grant awards from several sources.

- ***IAM's strategy of recruiting firms with union members that had good labor-management relationships helped in both planning and implementing training.*** Training designs at both HR Textron and WesTech emphasized skills workers needed to improve productivity. These initially good labor-management relationships, however, did not guarantee project success, and ultimately, differences between the union and management created tension at HR Textron as well as at Air Transport Manufacturing Company.

- ***Dislocated workers recruited into the project benefited from IAM's leadership.*** IAM worked with Hub Engineering to improve the design for training dislocated workers. Project staff also imposed stringent hiring guidelines for wages, benefits and working conditions to prevent potential employers from exploiting the fact that these long-term unemployed workers would be eager to find any job in manufacturing.

- ***The partnership between IAM and the Verdugo PIC helped in delivering traditional readjustment services to trainees.*** This was an important fall-back option for the project, which was looking for ways to serve dislocated workers in the absence of demand for their skills by innovative start-up companies.

- ***The role of IAM in the demonstration strongly influenced the project's evolution and outcomes.*** First, recruitment was limited to firms that employed union members. Participation was further limited to those firms where management had good working relationships with the union. For the most part, this helped speed the delivery of training. However, IAM's role as a worker advocate sometimes conflicted with its role as the.DCA grantee. Training was interrupted at both Air Transport Manufacturing Company and HR

Textron because of union contract negotiations or concerns about management's commitment to workers. In both instances, IAM was unable to follow-up on training results because of the tension with these firms. And finally, the union's manufacturing orientation may have limited the scope of job development. Placement strategies continued to focus on jobs in manufacturing, despite great uncertainty about the demand for workers in these jobs.

This project's experience delivering services to both dislocated and at-risk union members suggests a number of important lessons.

- Projects serving both at-risk and dislocated workers need to develop clear goals and measurable outcomes. The IAM project's broad objective was to change the culture of productivity to support diversification into commercial markets. While the project identified training outcomes to support such a cultural shift, data were not obtained by the grantee to indicate whether a cultural change had occurred.

- Assessments of participating firms are crucial for program success. This project did not develop explicit criteria for determining whether firms were committed to workforce training and prepared to do so. As a result, companies participating in the program varied considerably in their ability to train workers effectively for commercial production.

- Projects for at-risk workers need to ensure that management is committed to training. The experience at two firms indicates that both top-level and middle-level managers need to support the goals of transition and diversification. Without this level of support throughout the company, training gains are likely to be reversed.

- Projects need to secure adequate program funding. The grant amount should either cover the project's costs, or additional funding should already be committed to the project. In this project, plans to work with specific firms were often contingent on their ability to obtain unsecured funding from other sources. Such funding rarely came through or was received in lower amounts, making it difficult to achieve project outcomes at the scale that IAM envisioned.

- Training and placement should emphasize skills for jobs that are in demand. Throughout this project information about jobs for which workers were being trained was inadequate. The project attempted to enhance workers' previous manufacturing skills, but little was known about whether such enhancements would improve their employment potential. Further, little was known about whether these jobs offered adequate wages and benefits.

- Grant operations should be administered by a neutral authority to avoid conflicts of interest. In IAM's case, the union had to delicately balance its role as a workforce advocate with its role as grant administrator.

FACT SHEET: DEMONSTRATION PROJECT

LONG ISLAND DEFENSE DIVERSIFICATION PROJECT (LIDDP)

Project Location	Long Island, NY	*Grantee*	New York State Department of Economic Development (DED)
Type of Approach	Dislocation Aversion	*Project Administrator*	DED's Long Island Regional Office (LIRO)
Period Covered by Grant	November 1992–June 1995	*Key Contact(s)*	Carole Macaluso, Project Coordinator (LIRO)
Grant Amount	$852,647	*Geographic Area*	Long Island Region of New York State

Context

Long Island, home to numerous large multinational defense and non-defense firms, suffered substantial job loss in manufacturing during the 1980's. Subsequent cuts in defense spending exacerbated regional economic instability. Between 1987 and 1992, spending on defense prime contracts declined by $1.4 billion or 26%, resulting in the loss of approximately 30,000 jobs. At present, over 40% of remaining manufacturing jobs are defense-dependent. Dislocations are likely to continue.

Primary Goals

LIDDP was conceived as a coordinated effort to avert layoffs in nine defense firms by using training in high performance work organization (HPWO) skills to support the conversion to commercial markets and increase firm competitiveness. Local educational institutions were encouraged to develop curricula to meet the needs of these firms, thereby enhancing their capacity to provide training relevant to the needs of the local private sector. With regard to the nine firms, the project sought to:

- Conduct assessments of firms' training needs and coordinate with labor–management committees (LMCs) in developing strategic plans.
- Train the majority of all employees in the nine firms in High Performance Workplace Organization (HPWO) skills.
- Assist firms to implement total quality management practices (TQM), increase production efficiency, and develop new commercial products.

Key Players

- **Department of Economic Development/Long Island Regional Office (LIRO)** — Maintained primary administrative responsibility for the project including recruiting firms, consulting on training needs, and implementing training initiatives.
- **New York State Department of Labor** — Assisted firms in developing Labor Management Committees (LMCs) and training LMC members.
- **New York State Department of Education's Long Island Regional Education Center** — Assisted firms in developing customized curricula and identifying appropriate training providers.

Significant Outcomes

- Most firms completed planned training in HPWO skills, and began to use *ad hoc* teams in the workplace.
- A number of local agencies developed the capacity to provide on-site training in HPWO skills to private sector firms.
- Some firms made progress in increasing commercial sales.

THE LONG ISLAND DEFENSE DIVERSIFICATION PROJECT

Long Island, New York

THE CONTEXT

Although sometimes overshadowed by its New York City neighbor, Long Island is a major population and employment center in its own right, containing close to 2.6 million residents and 1.3 million workers. Unemployment in the region has approximated the national average, but job losses have been extensive during the past decade, particularly in manufacturing. More than 54,000 manufacturing jobs were lost between 1986 and 1992. Many of these jobs were in the relatively high-paying defense sector, and were lost as a result of declining defense-related sales by Long Island firms. Spending on defense prime contracts in Long Island declined by more than $1.4 billion (26%) between 1987 and 1992. Over 40% of the remaining manufacturing workforce in the region (52,000 jobs) is still employed in defense-dependent industries; many of these workers are at risk of further dislocations.

GOALS AND STRATEGIES

The primary goal of the Long Island Defense Diversification Project (DDP) was to avert layoffs at selected defense manufacturers by helping them to commercialize and become more competitive. A secondary goal was to develop the capacity of public educational institutions to serve Long Island businesses. A key feature of both of these goals was the advancement of High Performance Workplace Organization (HPWO) concepts. To help defense firms avoid layoffs, the project sought to provide them with the skills to become HPWOs. Training provided under the project focused on HPWO-related skills. Public education institutions were encouraged to develop new HPWO curricula and to tailor their training to the needs of individual companies. An additional strategy for achieving project goals was the formation of a labor-management committee (LMC) at each firm to serve as a vanguard for organizational change.

The original project proposal called for nine firms to participate in the demonstration. The original project objectives included:

- Employment levels will be maintained at 90% of July 1992 levels.
- 40% of the workers will receive training within six months of the introduction of LMCs in all nine companies.
- 85% of workers will attain measurable competencies in critical skills areas.
- 80% of workers will become involved in HPWO team efforts.
- Six of nine companies will introduce new commercial products.

- Four companies will find a new customer for an existing or modified product.
- All nine companies will implement Total Quality Management (TQM) systems and concepts successfully.
- Three companies will introduce and prepare workers for new technologies.
- Each firm will show progress on customized productivity and quality goals.
- All nine companies will have a skills training needs assessment performed by staff at State University campuses.
- All nine companies will introduce LMCs.
- All nine companies will participate in an average of 350 hours of training.
- All nine companies will introduce TQM systems and take first steps toward becoming HPWOs.
- Two companies will restructure job classifications.
- Five companies will participate in the New York State Industrial Effectiveness Program.
- Industry-sanctioned curricula will be developed for adapting workers and management to commercial product development and building worker-based teams.

KEY PLAYERS

Key players in the Long Island Defense Diversification Project included (1) the New York State Department of Economic Development's Long Island Regional Office, (2) the New York State Department of Labor, and (3) the Long Island Regional Education Center, an agency under the New York State Department of Education.

The **New York State Department of Economic Development** operates a variety of programs for industrial retention, and began the demonstration with a reputation for innovation. Several state economic development programs addressed the goal of industrial retention by funding worker retraining and management consulting services to make firms more competitive, a strategy consistent with the activities of the Defense Diversification Project. The Department of Economic Development's central office in the state capital had ultimate authority for the Defense Diversification Program (DDP) project, and managed all fiscal transactions, but the Long Island Regional Office (LIRO) was responsible for the day-to-day operations of the demonstration project.

The **New York State Department of Labor** assisted the Department of Economic Development during this first year of the project to support the latter's strategy of promoting the development of HPWOs. Two prior activities of the Department of Labor made it especially valuable for the purposes of the demonstration. First, as part of its rapid response activities under Title III of JTPA, the Department of Labor had gained extensive experience in helping companies form labor-management committees. The development of such committees at defense-dependent firms was a key feature of the original demonstration design, making the Department of Labor's cooperation invaluable. Second, through its involvement with New York State's Excelsior Award program (which bears many similarities to the U.S. Department of Commerce's Malcolm Baldrige Award program), the Department of Labor was familiar with a self-assessment process firms could use to measure quality and increase competitiveness. One of the first assignments given to newly-formed labor-management committees at companies participating in the demonstration was to conduct these self-assessments.

The **Long Island Regional Education Center** (LIREC) was invited to participate in the demonstration by the Department of Economic Development to advance the project's goal of enhancing local capacity for HPWO training. LIREC was one of ten regional education centers under the New York State Department of Education, and had a history of working closely with the Long Island Regional Office of the Department of Economic Development to help businesses locate training providers. LIREC had close contacts with local education providers, and acted as an informal broker between them and businesses. Under the demonstration LIREC helped participating firms identify HPWO training providers and develop HPWO curricula.

THE IMPLEMENTATION EXPERIENCE

The Defense Diversification Program evolved over the course of the demonstration, but retained its basic outline throughout the entire period. Small defense firms received training in HPWO and occupational skills and sought to use these skills to develop commercial products and identify new customers.

RECRUITMENT AND SELECTION OF FIRMS

The first phase of the demonstration began with nine firms. During the second phase of the demonstration an additional four firms were added. Of the nine firms participating at the start, six were recruited based on their previous involvement in an earlier project called the Defense Diversification Initiative. The selection process for firms in this earlier project was intensive. First, defense contractors from across Long Island were invited to attend a conference introducing the Defense Diversification Initiative. Fifty-two companies attended, and eighteen responded to a follow-up questionnaire survey. In-depth interviews with candidate companies were conducted to assess company commitment to and capacity for commercial production, and nine firms were ultimately selected to participate. After completing the Defense Diversification Initiative, six of these firms agreed to continue in the Department of Labor-funded Defense Conversion Adjustment (DCA) demonstration.

By inviting firms from the earlier project to participate, the Department of Economic Development effectively targeted firms with several common traits. All of the companies in the earlier project were small defense manufacturers with an interest in becoming successful commercial companies. They were eager to develop new products and markets and valued employee involvement in decision-making. They recognized their strengths and weaknesses, were committed to quality, and were willing to innovate. However, few of the firms actually had a strategic plan for conversion in place.

When three of these nine firms declined to participate in the current demonstration, the Department of Economic Development sought replacement firms from among those it had worked with in its Industrial Effectiveness Program (IEP). IEP firms undergo an extensive review of their operations by outside consultants. The review is intended to help firms re-orient their operations to become more competitive, and is applicable to both defense and commercial manufacturers. Several successful graduates of this program were invited to participate in the demonstration project. During the project's second phase, four additional firms were recruited in a similar fashion.

CHARACTERISTICS OF FIRMS

The nine firms participating in Phase I of the demonstration ranged in size from 50 to 300 employees and were concentrated in the aerospace and electronics industries. Their defense dependency ranged from 35% to 90%. Most were subcontractors to large defense prime contractors located off of Long Island. The four additional firms recruited during Phase were very similar in terms of these characteristics. The following table lists the firms' names, sizes, and chief products.

THE LONG ISLAND PROJECT
FIRMS RECEIVING DCA DEMONSTRATION TRAINING FUNDS, PHASES I AND II

Name of Firm	Number of Employees	Product Description
Aerodyne Controls	65	Pneumatic valves and switches
Aeroxflex Laboratories	250	Electromechanical products
Arkwin Industries	225	Hydraulics for aerospace industries
Dayton T. Brown	341	Technical manuals, sheet metal parts; commercial and military testing
Electronic Hardware	90	Plastic knobs
Frequency Electronics	400	Time and frequency meters
General Microwave Corporation	300	Microwave components and test systems, hybrid integrated circuits
ILC Data Device Corp.	131	Air movers and electrical motors
Loral Microwave/Narda	350	Microwave and UHF electronic components and test equipment
Microwave Power Devices, Inc.	237	Microwave amplifiers
Servo Corporation	125	Railroad safety equipment
Target Rock	173	High tech valves

SERVICES PROVIDED

In its efforts to create high performance work organizations, the Long Island project offered participating firms a range of services, including: (1) consulting on training needs, (2) labor-management committee development activities, (3) HPWO training, (4) occupational training, and (5) networking activities. The first two of these services were only available during Phase I of the demonstration.

Consulting on training needs centered on the skills companies would need to become HPWOs, and included plans for achieving this goal. After a competitive selection process, which included a screening by project administrators and final decisions by each company's LMC, each firm selected a consultant to complete a study of its training needs. Three different consultants were used. One consulting firm was particularly favored by company LMCs, and was selected by five of them.

Despite the participation of several different consulting firms, the process for producing these studies was relatively uniform. It began with extensive interviews of company staff. The consultants attempted to speak with staff from all levels and all departments of the companies in order to assess current skills and attitudes of staff, as well as the company's potential for becoming a HPWO. In some cases consultants also looked at capital equipment and work processes to see where the company stood with respect to potential commercial competitors, but in other cases, consultants concentrated solely on management issues.

The ultimate responsibility of consultants was to produce a report with recommendations for the training that companies would need to become HPWOs, and all consultants fulfilled this obligation. Lengthy consultant reports analyzed the work practices of each firm, and made specific suggestions for changes and retraining to facilitate the transformation of the firm into a HPWO. Training recommendations varied for each firm, but highlighted total quality management concepts, such as problem-solving, conflict resolution, developing self-directed work teams, statistical process control, and design for manufacturability.

Implementing these plans proved to be a challenge, and in many cases there was a substantial gap between what consultants had specified in their reports and what education providers needed to know to design an HPWO training curriculum. This gap necessitated greater consultation between education providers and firms than had been originally planned, delaying the start of training at most firms. Recognizing these limitations, project administrators dropped the consultant studies from Phase II of the project.

Although the consultant reports were expected to assess company needs and recommend training, several consultants went beyond this assignment and actually prepared plans for conversion. These consultants questioned the usefulness of HPWO training for companies that had no plans for how to enter commercial markets. In one consultant's words, the demonstration project "may have jumped into identifying needs too soon," before a strategic plan had been formulated, or a direction for conversion had been identified. As noted previously, despite a history of involvement with the Department of Economic Development, few of the firms actually had a strategic plan for conversion in place. HPWO offered clear benefits to these companies, but they would need to develop new products and markets in order to realize them.

LMC development services were among the earliest project activities, and were designed to help establish working groups in firms for the introduction of HPWO concepts and practices. At the beginning of the demonstration project, planners were convinced of the importance of cooperation between management and the work force as a means of increasing competitiveness, and identified LMCs as the best means to this end. According to project plans, LMCs would guide the implementation of demonstration activities in their companies, including selecting and working with consultants, identifying obstacles to becoming HPWOs, and choosing training providers. Providing LMC members with the skills to accomplish these goals was a focus of the project's first phase.

The LMC development process began with meetings between Department of Labor rapid response staff and company executives. During these meetings Department of Labor staff stressed the importance of labor-management cooperation for the creation of high performance work organizations, and introduced guidelines for selecting LMC members. The process of selecting employees to participate on LMCs took several months, after which Department of Labor staff oriented new team members to their roles and assigned teams two initial tasks.

The first task of newly-formed LMCs was to complete a starter guide for New York State's Excelsior Award program. The Excelsior Award program is based on a set of quantitative standards of quality. The starter guide offers companies a process for beginning to measure their own quality systematically, for comparing it to other companies, and for identifying strengths and weaknesses. Only two of the nine demonstration firms, however, completed starter guides, and both firms seemed dissatisfied with the process. Individual firms cited the complexity of the self-assessment, and the amount of time it required, as major obstacles to its completion. The Department of Economic Development acknowledged these problems in its plans for Phase II, and committed to develop an assessment guide that better suited the needs of defense firms.

The second task assigned to LMCs was accomplished more easily. Each LMC was asked to select two facilitators from among its members, and these facilitators received three days of training on the requirements of this role. Subjects covered in the training included leadership, team building, communication skills, and organizational skills. In addition to this initial training, facilitators also participated in a three-day seminar on "Developing the High Performance Work Organization," presented by staff from Cornell University's Program for Employment and Workplace Systems. At the time of the first site visit, project planners were also considering offering further training to develop facilitators and LMCs. By the second site visit a number of LMC development activities had already been included, such as workshops on problem-solving techniques, group dynamics, conflict management, and the role of top management in HPWOs.

As the project progressed, however, project planners re-thought the use of LMCs. At first they had considered these groups as the vanguard for the creation of HPWOs, and expected the LMCs to spearhead organizational change within the participating firms. In practice, however, the HPWO teams disbanded early on in the project, after failing to complete the Excelsior self-assessment. LIRO came to see this outcome as positive, especially once many of the companies began forming teams on their own to address problems on an *ad hoc* basis. The team concept changed from one permanent team of leaders to many *ad hoc* teams addressing discrete problems.

HPWO training was the major service provided to firms. As practiced by the Long Island project, HPWO training consisted of team-based training for the labor-management committees. In addition, broader groups of employees received instruction in a variety of courses including total quality management, statistical process control, communication skills, and management development training. The menu of courses was customized to each firm's needs, as was the curriculum of each course.

Occupational training supplemented the HPWO training, and in some cases served as an enticement for firms to participate in the demonstration. While a few firms recognized the value of HPWO training at the beginning of the demonstration, all saw value in occupational training to upgrade the skills of their workers. Occupational training courses were provided based on the needs of individual firms, and varied widely from company to company. As the demonstration progressed, some companies also expressed interest in receiving basic skills training (mostly literacy training and English as a Second Language). Funding for basic skills training was obtained from outside the demonstration, and four firms participated in this activity.

Networking activities were emphasized in Phase II of the project. The most prominent networking activities were a series of seminars targeting three different audiences: Chief Executive Officers (CEOs), middle managers, and LMC facilitators. At roughly quarterly intervals these groups met in facilitated sessions to hear presentations on issues important to organizations undergoing change, and to exchange viewpoints and personal experiences. In some cases representatives of outside firms were brought in to present their own experiences with problems similar to those faced by the demonstration projects. To supplement these seminars the project also published a bimonthly newsletter, and planned to promote lessons learned from the demonstration by producing a manual on assessment practices for firms that wish to become HPWOs.

PROJECT OUTCOMES

The chart below summarizes the success of the Defense Diversification Project in achieving its objectives. Since these objectives were originally stated in terms of nine companies, while the project recruited an additional four firms during Phase II, the outcomes exceed objectives in some instances.

THE LONG ISLAND PROJECT
PROJECT OUTCOMES IN RELATION TO OBJECTIVES

Objectives	Outcomes
Worker-Centered Objectives • Employment levels will be retained at 90% of July 1992 levels, • 40% of the workers will receive training within 6 months of the introduction of Labor Management Committees (LMCs) in all nine companies, • 85% of workers will attain measurable competencies in critical skills areas, and • 80% of workers will become involved in HPWO team efforts.	• Objective partly met. Employment increased in five companies, remained constant in five companies, declined by 66% in one company, and one company ceased operations on Long Island. One firm also dropped out of the demonstration, and no data are available. • Objective partly met. The percentage of the workforce receiving training varied as follows: 100%-two companies, 80%-two companies, 60%-three companies, 40%-three companies, 25% or less-two companies. • Objective partly met. An average of 60% of workers attained measurable competencies, as evidenced by completion of a training class. • An average of 60% of workers became involved in High Performance Workplace Organization (HPWO) team efforts.
Company-Centered Objectives • Six of nine companies will introduce new commercial products, • Four companies will find a new customer for an existing or modified product, • All nine companies will implement Total Quality Management (TQM) systems and concepts successfully, • Three companies will introduce and prepare workers for new technologies, and • Each firm will show progress on customized productivity and quality goals.	• Objective met. Six companies developed new commercial products. • Objective exceeded. Five companies found new customers for existing or modified products. • Objective partly met. Eleven companies received training and assistance in the implementation of TQM systems and concepts. • Objective met. Three companies introduced new technologies. • Unknown. Eleven firms received training related to productivity and quality, but no quantitative data on their progress was available.
Demonstration -Related Objectives • Nine companies will have a skills training needs assessment performed by State University campuses, • Nine companies will introduce LMCs, • Nine companies will participate in an average of 350 hours of training, • Nine companies will introduce TQM systems and take first steps toward becoming HPWOs, • Two companies will restructure job classifications, • Five companies will participate in the New York State Industrial Effectiveness Program, and • Industry-sanctioned curricula will be developed for adapting workers and management to commercial product development and building worker-based teams.	• Objective exceeded. Eleven companies received customized training needs assessments by private consultants. • Objective exceeded. Twelve companies introduced LMCs. • Objective partly met. Eleven companies participated in an average of 250 hours of training. • Objective exceeded. Eleven companies introduced TQM systems and took steps towards implementing HPWO. • Objective exceeded. Four companies restructured job classifications. • Objective exceeded. Twelve companies participated in the Industrial Effectiveness Program. • Objective met. The project developed a core HPWO curriculum, which was customized to individual firms during the demonstration.

As documented above, the original project objectives were largely achieved. Demonstration firms received a substantial amount of training, many developed new commercial products and customers, and nearly all firms implemented HPWO concepts and systems. The greatest discrepancy between objectives and outcomes came in the participation of individual companies. Project objectives included an average of 350 hours of training per firm, the attainment of measurable competencies in critical skills by 85% of trainees, and the participation of HPWO teams by 80% of workers. Outcomes in these areas were substantially below original objectives.

SUMMARY COMMENTS

The Defense Diversification Project spurred a small group of Long Island defense manufacturers to modernize their business practices. In doing so, the project provided these firms with the tools to develop new products and identify new customers. While the ultimate outcomes for these firms is uncertain, participating employers gave uniform praise for the training they received, and attested to its positive impacts on their future success.

The project's strengths included the following:

- ***An emphasis on HPWO as a path to commercialization for defense firms.*** The project focused on the adoption of commercial manufacturing practices, most notably HPWO skills, rather than the development of specific new products or non-commercial customers. HPWO skills came first, and ultimately facilitated these latter goals. This ordering of activities allowed firms to improve services to their existing clients while building the foundation for later commercial success.

- ***A strategy that recognized the need to reach out to the different components within firms.*** The project developed distinct services for CEOs, middle managers, and line workers. Training courses and seminars were created with this distinction in mind, and the substance and style of communication was adjusted to meet the specific needs of these groups. For example, CEO roundtable sessions focused on major themes such as the design of customer-driven manufacturing processes, while line workers received instruction in specific HPWO practices, such as Statistical Process Control.

- ***Activities to promote networking and peer-to-peer learning.*** From the start, the Defense Diversification Project recognized the value of communication among project participants, and designed activities to promote it. Seminars and workshops brought together individuals from across the project's firms to share experiences and learn from each other. Participants in these sessions benefited by hearing new approaches to shared problems, and received encouragement from peers in meeting the challenges of defense conversion. These exchanges were especially valuable for defense firms, which have traditionally been isolated from their peers due to secrecy concerns.

- ***Individually-tailored training, provided in the workplace.*** One of the strengths of the Defense Diversification Project was its ability to offer employers training customized to their specific needs, and available on the work site. Local education institutions met with firms *before* the start of training to design customized curricula and to arrange for class space and times convenient to employers' schedules. The majority of the training provided by this project was tailored to the needs of each employer, and conducted at the workplace. Employers placed great value on these features, and appreciated the relevance and convenience of the training their workers received.

- ***Increased capacity of local education institutions to serve business.*** While helping defense firms to commercialize, the Long Island project also helped education providers to better meet the needs of business in the future. By working with employers to create customized courses, public colleges and universities increased their capacities to provide similar services to firms outside of the demonstration. By the end of the demonstration, it was too early to determine whether this experience would lead to expanded services to business, but the foundation for such services had been laid.

Despite these strengths, several demonstration activities worked out less well than planned:

- ***Assessing firms' needs for training proved especially challenging.*** Two assessment activities were built into the project from the start: (1) assessments of HPWO training needs by hired consultants and (2) self-assessments of quality of performance. Neither assessment achieved its original aims, and both were discontinued in Phase II of the project. In addition, the emphasis placed on these activities early in the project delayed the start of training, and caused the project to fall behind on its original schedule.

- ***Labor-management committees proved less useful than originally planned.*** While project plans called for LMCs to lead the implementation of HPWO, this model conflicted with basic HPWO tenets of teams as *ad hoc* vehicles for solving problems. Teams played an important role within companies, but the teams that were most important were teams formed to address specific issues, such as the redesign of a manufacturing step, or ways to improve communication across departments. LMCs, with their open-ended responsibilities and limited resources, were a much less useful kind of team.

The experience of the Long Island Defense Diversification Project also provides a cautionary lesson for future projects of this type. Some firms can easily become dependent on public-sector assistance. All firms involved in the Defense Diversification Project had previously participated in at least one business assistance program offered by the Department of Economic Development. Some firms had been involved in multiple agency programs, spanning several years. As the project progressed, the need to wean these firms from public assistance became an issue of concern for project administrators. With limited resources and hundreds, if not thousands, of firms on Long Island that could potentially benefit from project services, the concentration of these resources on a small group of firms inevitably raised questions.

FACT SHEET: DEMONSTRATION PROJECT

MANAGEMENT ASSISTANCE AND TECHNOLOGY TRANSFER PROGRAM (MATT)

Project Location	St. Louis County, MO	*Grantee*	St. Louis County Economic Council; Department of Human Services, The Title III Substate Area
Type of Approach	Dislocation Aversion	*Project Administrator*	St. Louis County Economic Council
Period Covered by Grant	November 1992–July 1995	*Key Contact(s)*	Munsell McPhillips, Project Director
Grant Amount	$933,815	*Geographic Area*	St. Louis County, MO

Context

Home to numerous corporate headquarters, St. Louis is among the premier manufacturing centers of the Midwest. The large proportion of manufacturing-based employment, however, made the region vulnerable to the recession of the late 1980's, and to defense downsizing in the 1990's. Since 1989, approximately 30,000 local defense-dependent jobs have been eliminated and are unlikely to be regained —the aerospace industry has been particularly affected; 15,000 jobs have been lost at McDonnell Douglas alone. While the region's future prospects are still uncertain, manufacturing for export appears to be entering a period of sustained growth.

Primary Goals

MATT sought to assist small- and medium-sized defense-dependent firms in developing/marketing commercial products. The project provided assistance in:

- Assessing firms' internal strengths and weaknesses.
- Developing and implementing strategic conversion plans.
- Implementing management tools aimed at improving firm cost effectiveness.
- Pairing firms with appropriate consultants and trainers to support conversion objectives.

Key Players

- **St. Louis County Economic Council (CEC)** — Functional administrator for the grant and the oversight entity for MATT.
- **St. Louis County Department of Human Services** — Grantee in name only.
- **Economic Adjustment and Diversification Committee (EADC)** — Regional commission established to study the long-term effects of defense downsizing on the local economy: housed at the CEC and official sponsor of MATT.
- **Service Providers** — Private sector business consultants, these individuals provided customized instruction and expertise in a wide range of subjects to managers and employees of participating firms.

Significant Outcomes

- Assisted 10 firms in completing a comprehensive internal assessment to inform strategic planning for conversion/commercial competitiveness.
- Served 16 firms with long-term customized training and consulting services.
- A number of participating firms made substantial progress in developing commercial products and entering commercial markets.

THE MANAGEMENT ASSISTANCE AND TECHNOLOGY TRANSFER PROGRAM

St. Louis, Missouri

THE CONTEXT

The metropolitan St. Louis area is, after Chicago, the premier manufacturing center of the Midwest. The area includes the corporate headquarters for McDonnell-Douglas, Anheiser-Busch, Monsanto, and numerous smaller firms. Manufacturing employment, however, declined 13.1% in St. Louis through the 1980s, compared to a national decline of only 6.8%. This decline occurred even though there were nearly 13,000 jobs created at McDonnell-Douglas, largely in missile production.[1] In 1989, McDonnell-Douglas accounted for 42,300 out of a total of 73,500 defense-related jobs in the St. Louis area. In the years following 1989, defense cuts, in tandem with recession, have dramatically impacted the regional economy. The aerospace industry has been hit particularly hard; 15,000 jobs were lost at McDonnell-Douglas alone. Non-aerospace defense firms have also been affected, with job losses totalling 14,000. Only a small number of those jobs are expected to be regained. Clearly, the 1980s growth in aerospace acted as a temporary crutch to the regional economy. The decline of this sector will have reverberations throughout the region.

Despite these major blows, the area's economy is relatively strong. Defense cuts have been offset by growth in the service sector (e.g., the September 1993 unemployment rate was a full percentage point below the national figure of 6.8%). However, the quality of the replacement jobs is significantly lower on average than the lost jobs, and the region's long-term economic prospects are not at all secure. From 1989 to 1993, the civilian workforce shrunk slightly, after two decades of growth slower than the national average. On the other hand, nearly $3 billion of infrastructure spending is either in progress or in the pipeline and the region's manufacturing exporters appear to be entering yet another period of sustained growth.

GOALS AND STRATEGIES

The Management Assistance and Technology Transfer Program project (MATT) is just one of a number of publicly-initiated defense conversion efforts. MATT was developed as part of a regional defense conversion strategy to provide relatively long-term, highly-customized services to support individual firms interested in undertaking conversion efforts.

MATT sought to assist small- and medium-sized defense-dependent firms to survive the present military market downsizing by helping them to develop and implement commercial conversion plans. MATT planners believed that regardless of the considerable technical expertise of many firms, their management and organizational cultures were poorly adapted to the rigors of commercial markets. MATT was intended to assist firms in addressing such weaknesses. The primary strategy of the project was to help defense-dependent firms assess and upgrade their management and technical skills so that they could successfully diversify into commercial markets.

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[1] Without the 1980s military build up, total manufacturing employment would have fallen by nearly 50,000.

The basic elements of the MATT strategy were as follows:

- **Commitment to conversion** was the crux of the MATT approach to dislocation aversion. MATT staff did not serve companies whose leadership could not demonstrate commitment to diversification or conversion into commercial markets.

- **Assessment of firms' strengths and weaknesses** as manufacturing companies was the basis for conversion plans. Thus, it was recommended (but not required) that firms conduct a thorough self-assessment using an evaluation instrument developed by the National Center for Manufacturing Sciences entitled Achieving Manufacturing Excellence (AME).

- **Development of strategic conversion plans** was supported by private sector consultants approved by MATT staff and its advisory committee. MATT staff identified a pool of consultants who were called upon to assist individual companies with specific weaknesses.

- **Implementation of management tools to assist in improving firms' cost effectiveness** was encouraged by MATT staff. These tools included Workplace Activity Based Management (a method that combines activity-based costing and high performance/worker participation principles and procedures) and software to control manufacturing resource planning (for firms seeking to substantially reorganize their production systems).

- **Development of a strategic marketing plan**, using the services of a professional working in tandem with the firm's management, was an option for some MATT clients.

MATT staff viewed each of these steps or stages in conversion as involving an element of training. For example, during the self-assessment, participating workers developed and sharpened communication and conflict resolution skills, and learned about the company's goals, manufacturing procedures, and interrelations among different departments and processes. Thus, rather than viewing management assistance, workplace reorganization, and worker training as three isolated activities, MATT approached these aspects as constituent parts of a highly integrated conversion process.

The original MATT objectives were as follows:

- **Serve approximately 100 firm owners and or managers of at-risk firms with a "Core Course."** The Core Course was planned to be several weeks long and focus on the following subjects: continuous quality improvement, principles of advanced manufacturing, information management in the manufacturing environment, flexible manufacturing networks, waste reduction, marketing, international trade, and financing for conversion.

- **Serve approximately 120 firm owners and/or managers with additional courses**, typically courses in the same topic areas mentioned above, but tailored to the particular needs of the firm clients.

- **Serve 20 firms with intensive assessment sessions** designed to identify the firms' weaknesses with respect to competition in commercial markets.

- **Serve 16 firms with long-term, specialized training and consulting services.** These were to be provided by consultants with particular expertise in the needed areas.

Each of these objectives was significantly revised during the course of implementation.

KEY PLAYERS

The Economic Adjustment and Diversification Committee (EADC). This body was a two-state, seven-county commission established in 1990 to respond to a large layoff at McDonnell-Douglas. EADC members included economic development officials, citizen representatives (including local peace activists), executives from major defense contractors, academics, and consultants. Prior to the creation of MATT, the EADC's efforts included directly assisting laid-off McDonnell-Douglas workers (e.g., through a Department of Labor supplementary grant to the state of Missouri), studying the long-term impacts of defense cuts, and developing plans to respond to the cuts.

St. Louis County Economic Council (CEC). The EADC operated out of, and was staffed by, this quasi-public development agency responsible for business development and assistance. While the CEC was the (functional) administrative entity for the grant, MATT's stakeholders were represented by the EADC. The MATT project director reported to the EADC and its chair (also the executive director of CEC), who was ultimately responsible for the program. The MATT project director was also assisted by an advisory committee, whose members include local professionals working in the areas of dislocated workers, worker retraining, manufacturing engineering, technology commercialization, and economic conversion.

Service Providers. MATT services were provided by a diverse set of service providers, all of which were private sector business consultants. The consultants, with expertise in areas ranging from civilian aviation maintenance to strategic marketing, offered the flexible, individualized attention and expertise necessary to serve the disparate needs of client firms.

MATT was one aspect of a large and fairly well-coordinated set of conversion activities centered around the EADC. A number of these activities helped to lay the groundwork for the MATT program or provided business support resources to which MATT staff could direct their clients.

- The EADC performed two surveys of local defense contractors to determine their level of defense dependency and need for adjustment assistance. One study surveyed over 750 prime defense contractors in 1991, and the other surveyed 1,600 subcontractors and suppliers in 1993. These studies were funded by portions of a 1990 $100,000 Department of Defense, Office of Economic Adjustment (OEA) grant and a 1990 $150,000 grant from the Department of Commerce, Economic Development Administration (EDA). These surveys were used by MATT staff as the basis for outreach efforts to potential participant firms.

- The EADC conducted a study of defense spending in St. Louis and disseminated information to local businesses and workers about local adjustment efforts with an Office of Economic Adjustment (OEA) grant. MATT particularly benefitted from these outreach efforts.

- The EADC supported the acquisition of the St. Louis World Trade Center franchise, the effort being supported by an $820,000 grant from EDA. The Trade Center sparked much interest among MATT clients, at least one of which used the Center to seek entry into export markets.

THE IMPLEMENTATION EXPERIENCE

RECRUITMENT AND SELECTION OF FIRMS

MATT was designed to serve at-risk firms that were committed to but had not yet embarked upon or invested in the conversion process. To identify such firms, MATT staff obtained lists of defense contractors from the Defense Logistics Agency, McDonnell-Douglas, and one other large defense contractor in the region. The project also had access to the results of the EADC-sponsored survey of prime contractors and a marketing survey conducted by a local industrial machining training facility. This information was compiled into a database containing information on company size, annual sales, major products, and degree of defense dependence.

The database was used to generate a list of candidate firms. Introductory letters were sent out to over 1,000 firms. Nearly all of the firms were then contacted by phone. In addition, 36 medium and large firms were identified by the EADC survey of prime contractors as high priority companies. Due to the size of their workforce and dependence on defense contracting, these firms were sent personal letters urging them to consider involvement in the MATT program.

Companies expressing interest were contacted again. Senior managers of potentially eligible, interested firms were interviewed by phone or face-to-face by MATT staff. If appropriate, the project director visited the firm. The goal of the visit was to determine the eligibility of the firm based on the following criteria:

- Desire to convert as indicated by the firm's own efforts to reach commercial customers;

- Risk in the near or medium term of significant layoffs;

- Likelihood of program participation positively affecting a considerable number of jobs;

- Ability to convert as evidenced by corporate competence (evidence included a strategic plan, long-term commitment to quality, and financial integrity).

Determination of firm eligibility continued after the site visit. MATT leadership believed strongly that the firm's management had to be committed to the notion and practice of conversion. Beyond this commitment, managers were free to begin to develop goals and objectives relevant to their own commercialization.

THE MATT PROJECT
PARTICIPATING FIRMS

Name of Firm	Number of Employees	Defense-Dependency	Product Description
Advance Tool & Die	35	50%	Complex parts for the aerospace industry
AEL Aero Division	110	100%	Converts military aircraft into drones
Bellevilie Shoe	220	77%	Combat and safety work shoes
DATA	100	100%	Systems engineering, software, support, logistics
Essex Manufacturing	85	60%	Components for fighter-aircraft
Esco Electronics	2,500	90%	Electronic components for military & aerospace applications
Fablab	12	40%	Contract machining and engineering services for aircraft modification
P.B. Herndon	25	55%	Distributor of precision fasteners to aerospace industry
Hilton Systems, Inc.	22	100%	Program management and logistics
Hitchiner Manufacturing	100	80%	Non-ferrous investment castings
Kemco Tool & Machine	50	75%	Tools, jigs, and fixtures
Martak	5	100%	"Build-to-print" job shop
Precision Casting of Missouri, Inc.	3	90%	Investment castings
Precision Nameplate	6	90%	Photo-etched & sensitive anodized aluminum nameplates
Production Products	160	90%	Textile products and composite components
Sheller Instruments	84	53%	Tripods, gunsights, and optical equipment
Seyer Industries	53	100%	Mechanical support systems for aircraft

The 17 participating client firms had a number of qualities in common.

- All but the largest firm were not unionized.
- Approximately half of the firms were family-owned and managed.
- More than half of the firms were involved in metal fabrication or allied manufacturing, although the level of process and product sophistication varied considerably.
- Fully half of the firms were at least 90% defense-dependent and all firms were at least 40% defense-dependent.

- The firms were generally considered "medium sized." The total number of employees ranged from three to 2,500; the median number of employees was 50.

SERVICES PROVIDED

MATT provided services in three substantive areas, including (1) a self-assessment of firm strengths and weaknesses, (2) the development of strategic plans for improvement, and (3) the implementation of management tools to improve cost effectiveness.

SELF-ASSESSMENT OF FIRM STRENGTHS AND WEAKNESSES

To assist firms in conducting detailed and exhaustive self-assessments, MATT leadership chose to use an evaluation instrument developed by the National Center for Manufacturing Sciences entitled Achieving Manufacturing Excellence (AME). The rationale behind the design of this instrument was straightforward: before businesses can position themselves as global competitors, they first must develop an honest and far-reaching assessment of their management practices, strengths, and weaknesses.

The instrument consists of a common core of requirements for excellence, a step-by-step methodology for applying the quality requirements to a particular business, and guidelines for formulating a continuous improvement program. The requirements were derived from analysis of more than 3,000 requirements taken from 13 major supplier development and certification programs, and national and international quality standards. The 14 areas of excellence are management, planning, continuous improvement, flexibility, quality, cost, delivery, customer satisfaction, technology, people and culture, health and safety, stakeholders, operations and systems, and supplier development and certification.

About half of the firms that participated in MATT chose to conduct the AME assessment. The first step in the process of using AME was to choose an assessment team of three to ten employees whose combined expertise covered the 14 main areas of excellence identified in the instrument. These individuals then attended a day-long workshop led by a certified instructor to learn how to initiate the program, conduct the assessment, and work through the process of scoring and analyzing the results. After the workshop, the plan was for the team to return to the firm and conduct the assessment. According to the planned process, first the team reviewed the AME requirements for excellence. The team then tackled the 1,400 questions that comprise the actual assessment, interviewing employees involved in every function of the business and gathering supporting documents. The team then scored the assessment and compared the firms' management practices to those of "excellent" manufacturers on over 200 separate measures. Next, the team identified a small set of broad strengths and weaknesses in each of the areas of excellence, and developed a small set of recommendations to address the weaknesses and build on the strengths.

Although not all firms completed the self-assessment exercise, most firms that did complete it considered it well worthwhile. Some firms indicated that the AME process made dramatic changes in the way employees understood their companies and their respective jobs. The instrument allowed analysis of all work activities in terms of quality management. Employees at all levels reported that hidden inefficiencies were brought to light and the means to ameliorate them was often indicated by the process that had brought them to light. Assessment teams tended to function well. The only criticism made by firms concerned the intensity of the effort needed to complete the assessment. Everyday work activities could not be continued during implementation of the assessment. This made it a very expensive activity that had the potential to disrupt production.

DEVELOPMENT OF STRATEGIC PLANS FOR IMPROVEMENT

One of the key services provided to participating firms was ongoing consultation and support provided to company managers by the MATT project director, who was herself an expert in technology transfer and manufacturing. Early in the project, the project director also began to recruit a pool of consultants to serve the participating firms in each of the substantive areas of excellence identified in the AME. To this original list of substantive topics she added marketing and environmental consulting.

The MATT Executive Advisory Committee (made up of the project director, the CEC's executive director and economic dislocation program manager, and a senior executive in a local defense firm) approved the selection of consultants. At the end of the first year, a database of over 60 consultants had been developed whose collective expertise related to every aspect of manufacturing.

Client firms met with the MATT project director to pinpoint their consulting needs, and the MATT project director then recommended consultants. In general, rates were decided between consultants and their firm clients, but because MATT often reimbursed firms for a portion of the consulting fees, the project director had considerable input into the process. The MATT project director also oversaw the consulting relationships and was responsible for intervening when problems arose. Typical oversight activities include reviewing milestones with consultants and clients, and attending sessions as an observer.

IMPLEMENTATION OF MANAGEMENT TOOLS TO IMPROVE COST EFFECTIVENESS

MATT staff recognized that management tools appropriate for one firm might not work for another. Differences in size, manufacturing processes, and firm capabilities (e.g., ability to purchase and implement expensive management systems) affected the appropriateness of various management tools. Nevertheless, the project encouraged firms to explore the feasibility of several tools and approaches.

Cost-management software and training packages were recommended for firms seeking to substantially reorganize production systems and improve cost-effectiveness. The two packages offered included Manufacturing Resource Program II (MRP II) and Workplace Activity Based Management (WABM). Both packages included cost management software and specialized training for software implementation. WABM also included training for a comprehensive employee-driven firm reorganization. A total of four firms chose to participate in programs using these two packages.

Manufacturing Resource Program II (MRPII) is a technologically sophisticated software-based industrial production control package. It was expensive and required sophisticated Management Information Systems (MIS) hardware, installation services, and specialized training.

Considered "state of the art" by large manufacturing concerns, MRP II was the second generation of this package. MRP II was typically implemented with the help of a specialized management consulting or "Big 6" accounting firm. Training was required for all employees, but differed by job responsibilities. Senior managers learned about making decisions with MRP II data, MIS managers learned about operating the system, middle managers learned about properly inputting production and performance data into the system, supervisors learned about how to interpret data to meet production goals, etc. Implementation typically cost as much as $500,000 for a mid-sized manufacturer.

Workplace Activity Based Management (WABM) was a sophisticated approach to determining a firm's actual cost for each operation. The approach included the application of activity-based cost accounting principles, HPWO management principles (including worker participation), and software components. It was not one company's package, but a collection of ideas from various packages.

The implementation of WABM using the services of the consultants recommended by MATT involved a profound examination and potential reorganization of all aspects of firm operations. First, a relatively user-friendly accounting software system was installed. There was a small amount of training associated with the use of the software for MIS staff. Next, key managers participated in several days of training, focusing on an introduction to the principles of WABM. This done, the staff, sometimes all at once, sometimes department by department, met and conducted a bottom-up, exhaustive analysis of every aspect of their work. Although the MATT director and firms were generally pleased by the content of WABM, they did not have good experiences working with the out-of-town consulting firm that worked with local consultants to teach WABM to participating companies.

PROJECT OUTCOMES

The project proposal identified a number of objectives to be achieved during the first 18 months. The project's outcomes are discussed below:

THE MANAGEMENT ASSISTANCE TECHNOLOGY TRANSFER (MATT) PROJECT
PROJECT OUTCOMES IN RELATION TO OBJECTIVES

Objectives	Outcomes
Serve approximately 100 firm owners and or managers of at-risk firms with a "Core Course."	Objective not met. Early in the project, MATT leadership chose not to pursue this objective. Early overtures to local firm owners and/or managers demonstrated very little interest. Individualized consultations replaced this strategy.
Serve approximately 120 firm owners and/or managers with additional courses, typically courses in the same topic areas mentioned above, but tailored to the particular needs of the firm clients.	Objective not met. As with the first goal, MATT leadership chose to not pursue this goal because of lack of interest among participating firms.
Serve 20 firms with intensive assessment sessions designed to identify the firms' weaknesses with respect to competition in commercial markets.	Objective partly met. After early attempts to develop an assessment package, the MATT project director learned of the Achieving Manufacturing Excellence (AME) self-assessment package and chose to adopt it to pursue this goal. Of the total of 19 firms served, ten chose to pursue the AME self-assessment. Nine firms worked on conversion plans without doing the AME self-assessment.
Serve 16 firms with long-term, specialized training and consulting services.	Objective met. All 19 firms had an ongoing consulting relationship with the MATT project director. In addition, all firms considered using outside consultants to support their conversion plans, and several engaged consultants, with financial aid and substantive support from MATT. Three firms participated in Workplace Activity-Based Management (WABM) training.

SUMMARY COMMENTS

The MATT project sought to perform a very difficult set of tasks and was very successful in some of these. Very early in the project, MATT abandoned the development and implementation of its first two objectives, (1) the Core Course for firm owners and/or managers of at-risk firms, and (2) the specialized follow-on courses. From that point on, MATT moved aggressively and effectively to achieve its other two objectives: (1) help defense-dependent firms conduct self-assessments and (2) offer the specialized consulting services needed to further firms' individualized conversion strategies.

The MATT project had a number of notable strengths:

- The project reached at-risk firms that were interested in conversion and helped to connect them to the resources they needed to develop and implement concrete plans for improvement. The project also attempted to demystify the conversion process for firms and workers by training them to understand and take ownership of each stage of the process.

- The decision to use the Achieving Manufacturing Excellence (AME) self-assessment instrument was a good one. The comprehensive self-analysis was clear, easy to use, and highly effective in pointing out weaknesses in the management of manufacturing firms. Several respondents reported that the experience of conducting the self assessment had provided a whole new perspective on "excellence," allowing them to honestly and intensely evaluate their company's strengths and weaknesses, and to make appropriate and realistic recommendations on how to address the weaknesses and exploit the strengths.

- The project director insisted that the self-assessment process have a "management champion" within the firm, an individual personally responsible for the conduct and success of the self-assessment.

- MATT's arrangement for the delivery of business consulting services was also quite effective. The project provided a selection of pre-approved consultants with a broad range of expertise, but let the clients choose (with MATT oversight) the services they felt were necessary. This allowed the project to control the quality of consulting while giving the firms the freedom to choose services that best met their needs.

- One of the strongest features of the project may also be the most difficult to replicate; that is, the patience, skill and dedication of the project director in working with the managers of participating firms. The extensive consultations on conversion planning performed by the project director were clearly instrumental in securing management commitment to conversion.

- The project director insisted that participating companies be strongly committed to the goal of conversion. The project declined to serve companies that were believed to be "going through the motions" or were attempting to take advantage of MATT to fund activities not part of a conversion effort.

Despite these strengths, the project encountered a number of difficulties. Most notably, it was difficult for this project to establish interim project performance goals. After conducting a monitoring visit to the project, DOL suggested that the project establish measurable goals for participating firms that were more detailed than those listed in the proposal. The project director worked with participating firms to establish specific continuous improvement goals based on the results of their self assessments. For those companies not doing the self assessment, the project director planned to establish specific measurable goals with each firm. However, we found evidence only of highly variable "milestones" recorded in firms' client files. Apparently, little effort was made to schedule milestones in advance.

Overall, the experience of the project suggests that the following generalizations are likely to hold for similar projects:

- Firms often find it difficult or even impossible to invest the time in conversion planning; some firms need extensive "hand-holding." Project staff were sometimes frustrated with the seeming reluctance of firms to invest as much time and resources in starting the process of change as staff believed was necessary. To keep the process moving, the project director found she needed to offer extensive hand-holding to managers.

- The time needed to accomplish conversion goals is often far greater than anticipated. The firms participating in the MATT project will need years to accomplish some of the most basic objectives. When working with firms that are just starting down the path of conversion, the time needed to make measurable progress is even greater.

- Small firms in particular often need significant financial assistance to pay for needed consultant time. Although some research suggests that small firms are more adaptable and therefore more likely to succeed in conversion or diversification, one of the disadvantages of working with small firms is there are limited resources to pay for outside help.

FACT SHEET: DEMONSTRATION PROJECT

STRATEGIC SKILLS PROGRAM (SSP)

Project Location	Boston, MA	*Grantee*	Massachusetts Industrial Services Program (ISP)
Type of Approach	Dislocation Aversion	*Project Administrator*	Massachusetts Industrial Services Program
Period Covered by Grant	November 1992–December 1995	*Key Contact*	Doug Riikonen Incumbent Worker Training Unit, ISP
Grant Amount	$864,986	*Geographic Area*	State of Massachusetts

Context

Massachusetts had lost many of its jobs in traditional manufacturing by 1980. During the 1980's, however, growth in "high-technology" manufacturing, including computers and electronics, bolstered the state's economy. The defense industry was key to this growth. By 1990, an estimated one out of every 15 jobs in the state was defense-dependent. The nationwide recession hit Massachusetts particularly hard in the late 1980's. As the state struggled to recover from the recession, reductions in defense spending resulted in the direct loss of numerous jobs in high technology manufacturing. Direct job losses due to reductions in defense contracting between 1990 and 1995 were expected to reach 60,000. Indirect job losses and closure of military facilities further exacerbated the economic crisis.

Primary Goals

The Project sought to:

- Preserve high quality manufacturing jobs by using worker retraining as a strategy to support small and medium-sized defense-dependent firms in their efforts to achieve commercial viability.
- Assist firms in using worker retraining to link strategic plans for diversification/competitiveness and implementation of high performance principles in the workplace.

- Assist firms in enhancing worker skills, thereby improving work-unit and company performance, and improving employment stability of trained workers.

Key Players

- **Massachusetts Industrial Service Program** — Grantee and primary manager and administrator for the Strategic Skills Program.
- **Participating Firms** — A total of 20 firms participated in either Phase I or Phase II; three firms participated in both phases.
- **Training Providers** — Firms secured training from a wide variety of public and private providers.

Significant Outcomes

- Project-level achievements include the accumulation of a broad base of knowledge about defense conversion issues.
- Firm-level achievements include the completion of strategic training by 16 of the 20 firms that enrolled in the program; evidence of improved worker, team, and firm performance in these firms; and a high level of employment retention among participating firms.
- A majority of participating firms indicated growing commercial sales; defense-related sales often remained important.

THE STRATEGIC SKILLS PROGRAM
State of Massachusetts

THE CONTEXT

The manufacturing base of Massachusetts' economy, like that of many other states, has eroded sharply over the last three decades. By the 1980's, a number of traditional manufacturing industries—including textiles, furniture, paper, leather, and steel—that had previously provided stable, high-quality employment to Massachusetts workers were in sharp decline. However, employment in "high technology" manufacturing, including computer manufacturing, electronics, and related fields, grew during the 1980's. Defense-related spending was key to this growth. In 1990, defense prime contractors and university research laboratories in Massachusetts received over $8.1 billion in defense dollars (the third highest amount received by any state, after California and Texas). An estimated one of every 15 jobs in the state was defense-dependent in 1990.

Between 1990 and 1995, reductions in defense spending resulted in the direct loss of between 50,000 and 60,000 jobs in Massachusetts among defense contractors, subcontractors, and suppliers. Many other workers lost their jobs due to indirect impacts and military base closures. These defense-related job losses came only a few years after recession had devastated the state's economy. Although the overall state economy slowly and gradually improved during the demonstration period, these new defense-related job losses hit hard at the remaining manufacturing employment base in the state and had a severe impact on the economies of some local areas.

GOALS AND STRATEGIES

The goal of the Strategic Skills Program (SSP), as designed by the grantee—the Massachusetts Industrial Services Program—was to preserve high quality manufacturing jobs for Massachusetts residents. The project was intended to help stabilize small and moderate-sized defense-dependent firms and help them survive by strengthening commercial sales and reducing dependence on Department of Defense purchases. By assisting a small number of such firms, the state hoped to: (1) build a base of experience about how to assist small firms with the conversion process and (2) hold these firms up as models for other firms to emulate.

The strategy used to further this goal was to help participating firms train production workers and other non-managerial employees in skills that would: (1) enhance work-unit performance; (2) contribute to process improvements in the areas of time, quality, and costs; and (3) improve business performance and competitiveness over the long term. In its first phase, the project identified *worker retraining in high performance workplace skills* as the key element of worker retraining that would prepare workers from defense-dependent firms to help their firms become more competitive. Improvement of workers' skills in problem solving, continuous improvement, and teamwork would increase firm competitiveness by reducing production costs, increasing flexibility of production, and enabling the firms to tailor product design and scheduling to the needs and desires of commercial customers.

In its second phase, the project broadened somewhat the range of training that firms were able to undertake under the demonstration to include not only high performance workplace skills but also *specific occupational skills needed to achieve corporate strategic objectives for conversion and improvements in competitiveness*.

As described in the grantee's "Request for Concept Proposals" directed to firms interested in participating, the four major firm-level objectives for the demonstration were to:

- Enhance the skills of individual workers so that they can contribute to improved work unit or company performance.
- Improve work-unit performance or performance on cross-functional tasks.
- Bring about long-term improvements in company performance or competitive ability.
- Improve the stability of employment and earnings for trained workers.

KEY PLAYERS

Key players in the Strategic Skills Program included: (1) the Massachusetts Industrial Services Program (ISP) which received and administered the DCA demonstration grant, (2) the individual firms that were selected to receive subgrants for training under the demonstration, and (3) the training providers selected by the participating firms.

The Massachusetts Industrial Services Program (ISP) is a quasi-public agency jointly overseen by the Massachusetts Executive Office of Labor and The Executive Office of Economic Affairs. This agency is the state entity responsible for serving dislocated workers; it also offers assistance to small and moderate-sized firms through several business assistance programs. As the grantee and administrator of the Strategic Skills Program, ISP was responsible for designing the demonstration, setting project goals and objectives, developing firm targeting criteria and overseeing the competitive selection process, determining the general types of training firms should provide to their workers, overseeing the activities undertaken by participating firms, and collecting data to report on project outcomes.

Participating firms during Phase I included six individual manufacturing firms and one consortium of six manufacturing firms located north of Boston. The administrative entity for this consortium was the North Shore Employment and Training Board, the Job Training Partnership Act (JTPA) administrative entity for the local service delivery area. Eleven firms were selected for participation in the second phase of the project, three of which had also participated during Phase I. During Phase II, ISP discontinued the practice of offering grants to consortiums of firms. This change was made to give ISP an increased opportunity to ensure that high-level managers at each firm were committed to defense conversion and workforce training, to provide more hands-on advice and consultation during all phases of training, and to oversee the quality of training being provided.

Training providers were selected individually by the participating firms. During the first phase of the program, companies were required to research, interview, and select their own training providers, who could be either public or private institutions or individuals. During the second phase of the program, ISP provided participating firms with a list of "certified" training providers. Companies could either select training providers from this list, without a full competitive awards process, or issue a competitive request for proposals and review proposals from at least three training providers. Participating firms secured training services from a wide variety of training providers, including a business training institute at a local community college, private consultants and management consulting firms specializing in providing training in continuous improvement skills, and business associations/training institutes associated with a particular industry.

THE IMPLEMENTATION EXPERIENCE

The Strategic Skills Program operated two distinct rounds of recruitment and training awards. Although the overall project design remained stable over time, some modifications were made between the two demonstration phases, as ISP applied the lessons learned from Phase I to the second phase of the project.

RECRUITMENT AND SELECTION OF FIRMS

ISP identified small manufacturing firms that had been suppliers to the defense industry as the firms with the most pressing need for assistance with defense conversion. Unlike larger defense contractors that could decide to sell their defense-related plants or diversify by buying up existing commercially-oriented enterprises, small manufacturing firms generally had fewer options when faced with defense cutbacks. These firms faced rapidly declining defense markets and had to convert to commercial products and markets if they wanted to survive. In addition, they faced the same pressures to remain competitive in the global market as did existing commercial businesses.

For the first phase of the Strategic Skills Program, ISP designed a program that: (1) focused on the needs of small to moderate-sized defense-dependent firms; (2) used a competitive selection process to identify firms to receive training grants; and (3) made each firm responsible for the design of its own training and selection of its own training provider. Because of the short duration of the demonstration period and because coordinated strategic planning and market development services were not available at the time they developed the SSP proposal, the demonstration was designed for firms that had already developed strategic plans for conversion.

Because it had decided to award grants through a competitive process, the Strategic Skills Program spent the first several months of the demonstration designing materials to notify firms about the availability of the funds, clarify the objectives of the demonstration, and establish the eligibility criteria for interested firms. It also developed procedures and designed criteria to be used in selecting the winning firms. Although time consuming, this process helped ISP clarify its own goals and objectives for the demonstration and communicate them clearly to interested firms.

ISP used a two-step process to select firms for Phase I. Interested firms first submitted brief written concept proposals. Firms that received the highest ratings on the concept proposals were then invited to submit full proposals.

To be eligible for the Strategic Skills Program, firms had to meet the following criteria: (1) fewer than 500 workers (but exceptions were permitted); (2) workers employed at manufacturing facilities in Massachusetts; (3) sales revenue from defense manufacturing contracts and subcontracts; and (4) actual or projected reductions in defense-related sales. In reviewing proposals, ISP gave the highest ratings to:

- Small and medium-sized firms that were largely dependent on defense contracts.
- Manufacturing firms that ISP's financial assessment indicated were viable.
- Firms in which top management was committed to both diversification and training.

As one measure of firm commitment, ISP included a requirement that participating firms provide at least a 50% match to the public cost of the training. Matching requirements were also designed to encourage specific types of firm behavior: inclusion of managers in training at firm expense, and provision of paid work-release time for workers participating in training. Thus, firm matching requirements could be met through out-of-pocket costs of management training or wages paid to workers while in classroom training. ISP decided not to allow in-kind matches, because of the high costs of tracking and monitoring in-kind contributions, and because they wanted firms to make significant tangible contributions to the effort.

ISP staff had two major comments about their experience selecting firms during Phase I. First, although the process went smoothly, it was very time consuming. During the extended selection process, ISP project staff were busy with the administrative details of the application and awards process, rather than with helping firms that needed assistance. Second, project staff were afraid that the firms not selected for training grants would not come back to ISP for more help because the process labeled them as "losers."

In response to these concerns, ISP designed a more customer-service-oriented process to select firms for participation in the second phase of the demonstration project. Under this process, interested firms were encouraged to contact ISP prior to the development of an initial training plan. An ISP Strategic Skills specialist visited interested firms, met with firm representatives, discussed training goals, and helped the firms prepare "preliminary training plans." ISP's internal review board either approved the preliminary training plan or identified additional issues that needed to be resolved before the preliminary application was approved. During Phase II, firms were accepted into the program using a "rolling" approval schedule, so that firms that were ready could begin training, while firms not yet accepted could work to improve their training plans.

Although the Strategic Skills Program continued to target the same general type of firms during the project's second phase,[1] Massachusetts experienced a surprising decline in the number of firms responding to their recruitment efforts for the second round of funding. ISP staff speculated that the following factors may have contributed to this decline:

- Some small defense suppliers might already have closed.
- Firms that were highly dependent on defense sales at the beginning of the demonstration might no longer think of themselves as "defense firms," if they had made progress in diversifying their markets.
- Some small and moderate-sized manufacturing firms that were dependent on defense sales might already have completed strategic planning for conversion on their own and no longer needed or wanted government assistance in planning or worker retraining.
- Other firms might have been in a downward spiral and been so strapped for cash that they couldn't afford to release workers for training or contribute to the costs of training.

ISP staff also noted that firms applying for/participating in the second phase of the demonstration tended to be larger than the firms that applied under Phase I.

CHARACTERISTICS OF THE FIRMS SELECTED FOR PARTICIPATION

The 20 firms that received DCA-funded training grants under the Strategic Skills Program during Phases I and II are summarized below. The firms selected for participation in the Strategic Skills Program were extremely varied. The majority of the participating firms manufactured high technology materials or product components. Most participating firms had both defense and commercial sales prior to participating in the demonstration, but the extent of defense-dependency varied widely, with defense sales ranging from 6% to 100% of total sales.

In terms of workforce size, the participating firms ranged from 20 employees to 398 employees. Although none of the firms participating in Phase I were covered by collective bargaining agreements, several Phase II firms had workers who were covered by collective bargaining agreements. Furthermore, in one Phase II firm, the employees had recently purchased the firm from

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[1] During the second phase of the demonstration, the eligibility criteria were revised somewhat. Firms applying for Phase II had to be able to document, with reference to specific defense contracts, that their defense-related sales totaled at least 30% of all sales or at least $500,000 during one or more of the two years prior to the application. This change was made so that all participating firms would also qualify for the federal Defense Diversification Program (DDP) program, which was a second funding source for the second phase of the Strategic Skills Program. During Phase II, ISP also increased the required firm match to 100% of the public cost of training. This change was made because ISP wanted to emphasize the importance of company commitment to training, and because most of the participating firms during Phase I had met or exceeded a 100% match rate.

THE STRATEGIC SKILLS PROJECT
PARTICIPATING FIRMS

Name of Firm	Number of Employees	Product Description
Alpha Industries, Inc.	475	Semiconductors, integrated circuits, advanced microwave ceramics
Alphatron Manufacturing, Inc.	46	Electronic cable assemblies
Barry Controls	334	Shock and noise absorption components and assemblies
Crystal Systems, Inc.	19	Fabricated crystalline materials
Duro Industries, Inc.	398	Fabric finishing
Flex-Key Corporation	36	Keyboard and control panel assemblies
EG&G, Inc. - Salem Division	335	Optical products including flashlamps, other lighting sources, power supplies, and hermetically sealed switching devices
Galileo Electro-Optics, Inc.	204	Electro-optical devices and components
Hybricon Corporation	60	Electronic backplanes and card cage assemblies
HyComp, Inc.	31	Hybrid circuits using thick film and thin film technology
IMI Incorporated	70	Printed circuit boards
Lau Technologies, Inc.	174	Electronic board assemblies, digital imaging systems
Market Forge Industries, Inc.	135	Commercial cooking equipment, industrial shelving, sterilization equipment
Middleton Aerospace	39	Gas turbine engine components
Moduform, Inc.	91	Institutional furniture and library case goods
Parlex Corporation	340	Printed circuit boards and cables, contract manufacturing of electronic board assemblies
Plymouth Rubber Company	326	Vinyl and rubber tape
Temptronic Corporation	75	Localized temperature control equipment
Tool Technology, Inc.	19	Precision machining
Warren Pumps	242	Screw pumps and rotary pumps

the previous owner. Thus, issues of whether and how to involve workers in developing and overseeing training plans tended to receive more priority during the second phase of the demonstration.

SERVICES

SERVICES TO MANAGERS

The Strategic Skills Demonstration did not provide services to assist firms in developing strategic plans for conversion. Neither did the project pay for training to managers. However, the demonstration did emphasize the importance of management commitment to and participation in planned training. To further encourage training for managers, ISP permitted companies to count the costs of management training as part of their required company match.

During Phase I, ISP also developed and implemented quarterly seminars for senior management staff at the participating firms. These seminars were designed to provide support to top management around workforce training issues and to encourage networking among firms. Seminar topics during Phase I included workplace literacy training, how to make employee training relevant and enduring, and leadership skills for middle and upper managers. Some participating firms reported that these seminars were valuable sources of information as well as useful opportunities for networking with other firms. However, most firms seemed to want to limit coordination with other firms to informal information sharing, rather than developing shared training approaches.

Several of the companies participating in the second phase of the demonstration conducted a formal training needs assessment or asked an outside consultant to assess worker training needs prior to finalizing their training plans. ISP encouraged training needs assessments during Phase II, although they stopped short of requiring all participating firms to participate in a formal needs assessment process prior to developing their training plans. During Phase II, ISP staff also developed and offered its own cultural and organizational assessment, called a "climate assessment," to participating firms. This procedure was designed to assess a firm's potential for high performance workplace organization practices and identified significant "cultural" barriers to introducing High Performance Workplace Organization (HPWO) practices within the firm.

SERVICES TO WORKERS

Throughout the Strategic Skills Project, ISP emphasized the importance of linking worker training to a firm's overall strategic plan for conversion. Participating firms were required to articulate the link between training and the firm's conversion objectives and to identify how they would measure the effectiveness of the training in terms of specific improvements in firm or work-unit performance over time.

Although firms were given the discretion to develop their own training programs and select their own training providers, the RFP developed by the project to recruit interested firms during Phase I gave very specific suggestions about what types of training to provide and how to provide them. The general categories of training that were invited in the RFP included:

- ***Job Skills.*** Firms were particularly encouraged to provide "cross-training" to increase worker flexibility or to train workers to use new production technologies. General occupational skills upgrading was also permissible.

- ***Team and Interactive Skills.*** Firms were encouraged to provide training in problem-solving and communications skills, and to arrange for workers to practice and apply these skills in addressing real problems faced by the firm.

- ***Quality Action Skills.*** Firms were invited to include training in total quality management, just-in-time inventory methods, statistical process control, and ISO-9000 specifications or related skills to improve work unit productivity, efficiency, or safety.

- ***Basic Skills.*** If workers needed basic skills training to benefit from other skills training areas, this was a permissible training activity.

The training proposals submitted by the selected firms were quite responsive to ISP's guidelines. During Phase I, the categories of "quality action" skills and "team and interactive skills" received more attention than specific job skills training. Most of the training occurring during Phase I emphasized skills needed to improve work unit productivity or efficiency, rather than training to introduce new production technologies, cross-train workers in new skills, or upgrade general occupational skills.

During Phase II, SSP training was used to address a broader set of workforce training goals, including providing occupation-specific skills training to workers in targeted cells or work units within participating companies. For example, a pump manufacturing company visited during Phase II implemented a training plan that trained production workers in shop math, blueprint reading, cutting tool technology, and computerized numerical control lathe-turning technology. Similarly, an electronic assembly firm diversifying into digital imaging technology implemented a plan for training targeted workers in specific occupational skills that included robotics maintenance and repair and software licensing. In addition to providing occupation-specific skills training to specific groups of workers, a number of the firms participating in Phase II also provided training in communication skills, total quality management skills, and basic educational skills to improve overall production objectives.

By the second phase of the Strategic Skills Program, Massachusetts had secured funding support from several additional Defense Diversification Program (DDP) grants to support retraining for incumbent workers in defense-dependent firms. These additional grants were used to expand the number of firms reached during the second phase of SSP and to refine the general strategic skills training approach to meet the needs of several larger companies facing declining defense-related sales.

During both project phases, some participating firms developed training specifically to prepare workers to participate in the development of new non-defense products. In most firms, however, training was more generally oriented to helping workers reduce production costs or save time, thereby increasing customer satisfaction and sales and making the company more profitable and more competitive in both defense and non-defense markets.

Training grants awarded by ISP ranged from $16,000 to $80,000. During Phase I, training grants were funded solely with DCA demonstration funding. During Phase II, a number of firms received support for training from a combination of DCA demonstration and DDP discretionary grant funding.

Despite the wide variety of training providers used, the content and instructional style of training, particularly for training in team-building skills and quality action skills, was quite similar across the Phase I firms. This similarity was due in part to ISP's influence on training content. It also seemed to be a result of provider understanding of the importance of "active learning" in effective training techniques. Across the participating firms, worker training took place during regular working hours. One common pattern was for training to occur in modules of limited duration—e.g., 24 to 40 hours of training. Across all firms, formal classroom instruction used concrete workplace examples and broke students down into small groups to practice the skills being taught. Each of the participating Phase I firms also combined formal classroom training with applied practice using problem-solving teams in the workplace.

Variations in training from firm to firm included whether the workers were trained as members of intact "work unit" teams, as members of cross-functional problem-solving teams, or prior to any assignment to teams. Other variations concerned the duration of individual training sessions and the frequency of training sessions over time. Individual firms also varied in whether they arranged for instructors or other consultants to provide follow-up training or coaching in the workplace after the end of the formal training period.

One practice that appeared to enhance the meaningfulness of the training for individual workers at several firms was to assign workers to problem-solving teams prior to training. Sometimes these teams reflected actual work-unit teams. In other cases, cross-functional teams were formed to address specific problems that involved more than one work unit. When workers were assigned to teams and/or were given specific workplace problems to solve prior to training, this helped provide an immediate framework for applying and practicing the skills being taught. Anecdotal evidence also suggests that training proceeded more smoothly and new skills were absorbed more readily into ongoing work tasks when: (1) training was spread out over an extended period (e.g., three to six months), with opportunities to apply skills between training sessions; (2) training sessions lasted half-days, rather than full days; and (3) there was provision for follow-up training or coaching after the end of the formal training.

The firms that trained selected workers to be trainers or facilitators charged with disseminating skills to co-workers had mixed experiences. Although the "train-the-trainer" model appeared to work well for one firm, another firm that tried to use this model had a more difficult time arranging training for the workers who did not attend the first round of training.

PLANNED POST-DEMONSTRATION SERVICES

ISP would like to continue to play an active role in encouraging and supporting workforce training among Massachusetts companies after the end of the DCA demonstration. ISP staff are currently developing a menu of training-related services that can be offered to both defense-oriented and non-defense companies on a fee-for-service basis. Key planned service elements include skills assessments completed by employees and company managers and the development of a training resource network that member firms can utilize to address their identified workforce training needs.

OUTCOMES

The success of the Strategic Skills Program in achieving its stated project-level and firm-level objectives is summarized below.

THE STRATEGIC SKILLS PROJECT
PROJECT OUTCOMES IN RELATION TO OBJECTIVES

Objectives	Outcomes
Project-Level Objectives Build a base of experience about how to assist small firms with the conversion process.	Objective met. Project enrolled a wide range of small and medium-sized firms and learned from successes as well as failures of participating firms.
Hold up these firms as models for other firms to emulate.	Objective partly met. Project tried to encourage networking among participating firms as a way to disseminate information about successful training experiences. Project found that the "window of opportunity" for disseminating lessons learned to additional defense-dependent firms was limited. As time passed, fewer firms responded to ISP's outreach. Project developed plans to apply lessons learned to post-demonstration efforts to encourage company training for incumbent workers.
Coordinate Defense Conversion Adjustment (DCA) demonstration funds with other funds to meet firms' needs for assistance with strategic planning and market research prior to training.	Objective not met. An initial Economic Development Agency (EDA) grant was over before the DCA grant was received. Technology Reinvestment Program (TRP) funds subsequently received for market identification and strategic planning assistance were not offered to the firms recruited for the demonstration.
Firm-Level Objectives Enhance the skills of individual workers so they can contribute to improved work-unit performance.	Objective partly met. All but four of the 20 firms enrolled completed planned training.
Improve work-unit performance or performance on cross-functional tasks.	Objective met. Several firms documented improvements in aspects of work-unit performance, such as reduced "down-time" for production, simplified materials handling process, simplified order processing, and reduced scrap rates.
Bring about long-term improvements in company performance or competitive ability.	Unknown. This outcome was difficult to measure within the timeframe of the demonstration.
Improve the stability of employment and earnings for trained workers.	Objective partly met. Most participating firms avoided layoffs during the training period. Most of the participating firms also experienced stable or increasing total sales during the training period.

To document firm-level outcomes, ISP required each participating firm to develop its own measures for documenting the effects of worker retraining and to provide baseline and final benchmarks on these measures. Although the lack of standardized performance measures made it difficult to compare outcomes across firms, ISP staff believed that it was more important to have each firm develop measures appropriate to its own specific objectives and measurable using its ongoing management information system.

PROGRESS IN ACHIEVING SKILLS ENHANCEMENT OBJECTIVES

Of the twenty firms that participated in the Strategic Skills Program with DCA funding between July 1993 and December 1995, only four firms experienced severe problems that interfered with the successful completion of training. One firm closed its Massachusetts facility shortly after its workers attended training. Two participating firms failed to complete their planned training after running into financial problems. A fourth firm spent more time than anticipated developing a steering committee and planning training, and was not able to complete its complete training plan during the grant period. In the remaining sixteen companies, training was completed as scheduled, with some adjustments to the training schedule to accommodate production demands.

After two firms encountered difficulty in completing training during Phase I, ISP made several changes to make it more likely that subsequent grantees would be able to complete their training objectives. They requested Phase II applicants to provide written statements of commitment to training from both local facility managers and representatives of the parent company, if relevant. In addition, the agency carefully reviewed company "financials" to make sure that interested firms had the financial capacity to sustain operations during and after training.

PROGRESS IN IMPROVING WORK-UNIT AND OVERALL FIRM PERFORMANCE AND COMPETITIVENESS

Although Massachusetts ISP encouraged participating firms to identify quantifiable training objectives in terms of either work-unit or overall company performance measures and provide initial and progress benchmarks on these measures, the firms participating in the Strategic Skills program had widely varying degrees of success in reporting outcome measures and assessing how training had influenced these outcomes.

Some participating firms set specific objectives for *improvement of work-unit performance* and tracked progress on the specified measures. For example, one firm participating in the first project phase reported that it had reduced its "down-time" for production set-up from 30% to 21% of all work time, simplified its materials handling process, simplified order processing, and clarified when product parts should be repaired versus scrapped, as a result of the introduction of problem-oriented teams trained in process analysis and teamwork skills.

Another firm, whose workers were trained in communication skills and analytic tools such as making checklists and fishbone charts during the first phase of SSP, encouraged all divisions to rally behind company-wide goals of 95% inventory accuracy and 95% on-time shipments for the coming year. During the second phase of the demonstration, this company focused training more closely on workers in a single production unit to try to bolster performance by this unit.

Other firms submitted reports to ISP documenting *changes in overall corporate outcomes*, including percentage changes over time in total sales and defense-related sales. Of the 11 firms that provided information on corporate-level outcomes, five reported that they had increased total revenues while decreasing dependency on defense-related sales; three reported increases in defense sales and stable or increased total sales; one reported no change in total revenues or defense-related revenues; and two reported significant decreases in both total sales and defense-related sales.[2]

Although firms tried to respond to ISP's "accountability" requirements, it was often very difficult to assess how training had affected the measured outcomes. Two key problems in measuring training outcomes included: (1) the fact that the effects of training were often expected to become evident over a much longer time frame than the 12- to 15-month demonstration period established for the participating firms; and (2) the fact that a myriad of other factors also influenced whether firms were successful in achieving their corporate goals.

PROGRESS IN ACHIEVING IMPROVED JOB STABILITY AND EARNINGS FOR TRAINED WORKERS

Of the 15 firms that provided information about employment retention during the training period, 13 retained all workers that participated in training until the end of their training grant period. The two companies laid off workers during training—one closed its Massachusetts facility and the other suffered a financial crisis and was forced to lay off workers. Firms were not asked to provide followup reports on the employment status of these workers after the end of their training grants.

SUMMARY COMMENTS

The Strategic Skills Program is an example of how a state can provide effective leadership in defense conversion by offering a clear vision of desired project objectives without attempting to "micro-manage" the internal activities of firms or their relationships with their training providers. The following features characterize the key elements of the Strategic Skills Program:

- Training that emphasizes skills to support continuous improvement, team building, and total quality management.
- A program design that permits individual firms to control their own detailed training design and selection of a specific training provider.
- Emphasis on the necessary linkages between strategic plans for conversion and proposed worker training.

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[2] However, the ISP project manager indicated his lack of confidence in these outcome measures because they were based on quarterly sales figures, which tend to be highly volatile from quarter to quarter.

- Emphasis on management commitment and involving managers in training in addition to workers.

- Under the second project phase, an emphasis on working closely with interested firms to help strengthen training designs.

If ISP had been able to design its DCA demonstration without being constrained by federal guidelines, they would have changed two features of the program. First, they would have set aside some funds to help companies complete the pre-training phases of strategic planning and market research. This would have enabled a broader group of companies to prepare themselves for workforce training. Second, they would have increased the emphasis on training for managers as part of integrated training plans involving both management and workers.

As a result of receiving the DCA demonstration grant and several subsequent federal training grants, ISP was able to establish an ongoing Incumbent Worker Training Unit that is planning to continue to support worker retraining efforts by Massachusetts firms.

Review of the Massachusetts' experience with the Strategic Skills Program suggests that similar projects would be wise to consider the following guidelines:

- Use a process to select firms that permits the administrative agency to provide technical assistance and capacity-building to interested firms during the application process.

- Screen applicants to ensure that firms have a vision and plan for defense conversion and have proposed training that relates clearly to the conversion plan. Develop a broader range of business assistance services to offer to firms that are not ready for training.

- Make sure firms have the financial capacity to complete training effectively. They also need to have the scheduling ability to release workers for training. It appears that larger firms are able to be more flexible in releasing workers for training because there is some overlap of skills across workers, while small firms often need all or most workers to keep production going.

- Try to ensure that all levels of corporate managers, including owners or managers of parent or holding companies, are supportive of the strategic goals for conversion and the plans for worker training.

- Emphasize the importance of involving worker representatives in the development of the training plan and give a labor-management committee a role in guiding the training.

- Emphasize that all participating firms need to be willing to set measurable performance objectives at the work-unit or firm level and track progress on these measures.

- Emphasize the importance of providing opportunities for workers to practice their new skills in the workplace with support from the trainers or other qualified staff. Followup services by outside consultants beyond formal training may be essential to support this process.

- Emphasize the importance of involving managers and line supervisors in training, so they can support the organizational changes that will enable workers to utilize their new skills.

- Encourage firms to view workforce training as an ongoing process.

FACT SHEET: DEMONSTRATION PROJECT

MINNESOTA DEFENSE CONVERSION ADJUSTMENT DEMONSTRATION

Project Location	Minneapolis, MN	*Grantee*	Dislocated Worker Unit, Minnesota Department of Jobs and Training
Type of Approach	Combined Dislocation Aversion and Worker Mobility	*Project Administrator*	Minnesota Teamsters Service Bureau
Period Covered by Grant	November 1992–October 1995	*Key Contact*	Jean Dunn, Director, Teamsters Service Bureau
Grant Amount	$444,142	*Geographic Area*	Minneapolis-St. Paul metropolitan area

Context

Although the Twin Cities economy is relatively strong and diverse, the decline of the mainframe computer industry and defense manufacturing have caused large-scale dislocations. Alliant Techsystems, Inc, once a large subsidiary of Honeywell Corporation and now an independent producer of munitions, employed approximately 3,800 workers at the beginning of the demonstration. The union and its service organization, the Teamsters Service Bureau, identified worker training as a strategy to both avert further layoffs and assist workers in transitioning to new jobs should layoffs occur.

Primary Goals

The Alliant Techsystems/Teamsters project was conceived as an effort to train at-risk workers in skills that would enable the firm to continue to compete in defense markets or that would prepare them for new jobs in other industries should lay-offs occur. The project sought to:

- Train at-risk workers in basic skills, computer literacy, and technical skills to improve the production process and increase worker productivity.
- Avoid layoffs among at-risk assembly workers by providing some workers the opportunity to receive training as entry-level machinists.

Key Players

- **Dislocated Worker Unit, MN Department of Employment Security** — Formal grantee and participant in early planning stages.
- **Minnesota Teamsters Service Bureau** — Primary project administrator; the Bureau participated in project-level strategic planning and provided services.
- **Alliant Techsystems** — Contributed substantial resources of its own to support training.
- **St. Paul Technical College** — Provided assessment of training needs, designed curriculum and materials, and provided on-site training to workers.

Significant Outcomes

- Coordination among multiple project partners helped to overcome a number of implementation barriers.
- More than 200 employees of Alliant Techsystems completed training.
- During the project, 100 assembly workers were laid off; workers that had trained as machinists were protected from layoff.

MINNESOTA DEFENSE CONVERSION ADJUSTMENT DEMONSTRATION

Minneapolis, Minnesota

THE CONTEXT

The Twin Cities metropolitan area, where Alliant Techsystems is located, has a highly educated workforce and a diverse, generally healthy economy. However, since 1990, large-scale dislocations have occurred in high technology manufacturing due to declines in the mainframe computer industry and defense-related manufacturing. In 1992, defense-related manufacturing in Minnesota accounted for about 47,000 workers or two percent of the state's nonagricultural workforce. Rather than pursuing strategies for diversification or conversion, many of the local defense prime contractors are downsizing and attempting to capture a share of the remaining defense market. Among these is Alliant Techsystems.

Alliant Techsystems, Inc. is one of the larger defense-related employers in the area. Prior to September 1990, Alliant Techsystems was a defense division of Honeywell Corporation, with 8,000 employees. The division made munitions, torpedoes, landmines, fuses, and other explosive devices. Spun off by Honeywell in 1990 as a separate corporation, Alliant Techsystems reduced its workforce by over 50% between 1991 and the end of 1993. Of the firm's 3,800 employees in 1993, about 750 were hourly production workers, represented by Teamsters Local 1145. The rest of the workforce included salaried engineers, project managers and office workers. At the time the demonstration was planned, Alliant Techsystems had indicated that it was interested in staying in the defense sector and stabilizing its sales by developing and pursuing contracts for more sophisticated products (e.g. explosives that could pierce the shells of armored vehicles such as tanks).

GOALS AND STRATEGIES

This project was designed to meet dual goals. On the one hand, project planners recognized that further layoffs at Alliant Techsystems were likely, particularly among workers assigned to the firm's two assembly facilities. As a result of previous layoffs, all remaining assembly workers had at least 17 years of service with the company. These workers were ill-equipped to find new jobs in the Minneapolis-St. Paul economy, where unskilled manufacturing jobs have been on the decline for some time. The Teamsters and its service organization, The Minnesota Teamsters Service Bureau, helped to identify the goal of working to upgrade the skills of currently employed Alliant Techsystems employees on a "proactive" basis rather than waiting for more workers to be dislocated. The project was designed to introduce these at-risk assembly workers to "workplace basic skills" training as a way to encourage them to begin building the skills that would make them more employable in the local labor market, should they be laid off.

On the other hand, Alliant Techsystems and the Teamsters union local were interested in retaining jobs at the firm for as many Alliant Techsystems workers as possible. One strategy they identified to retain existing workers was to increase the in-house capability of Alliant Techsystems to perform short-run flexible machining jobs that it had previously assigned to outside subcontractors. Thus, the demonstration was designed to upgrade the skills of existing machinists and to prepare a small group of at-risk assemblers for new job assignments as entry-level machinists to fill the company's growing need for in-house machinists.

These dual strategies were undertaken as part of a unified demonstration. The demonstration proposal included six distinct objectives:

- Establish a project steering committee to review the project design and oversee implementation of the project.
- Design and develop a training program based on a functional analysis of industry and occupational requirements for machinists. Develop training in specific occupational skills as well as job-specific basic skills. Involve all project partners in reviewing the training curricula.
- Select training participants, conduct training, evaluate the training program, and modify training modules, as needed.
- Develop and make available support services.
- Produce and disseminate training products, guides, and reports.
- Conduct formative and summative evaluations and analyze implications for project activities.
- At the time the demonstration began, no layoffs had been announced. The company offered to support the full costs of training for 160 at-risk assembly workers, approximately 20 entry-level machinists (to be selected from the ranks of the at-risk assemblers), and approximately 35 experienced machinists.

KEY PLAYERS

This demonstration was a collaboration between four project partners: the Minnesota Teamsters Service Bureau, Alliant Techsystems, Teamsters Local 1145, and the St. Paul Technical College. Each of the key partners in the demonstration supported the overall demonstration objectives, as well as having its own objectives for the demonstration. Each partner was responsible for different aspects of the planned demonstration activities. To assist in the oversight and guidance of the demonstration, the partners developed a Project Steering Committee and an Internal Planning Team.

The Dislocated Worker Unit of the Minnesota Department of Jobs and Training, recently renamed the Minnesota Department of Employment Security, was the official grantee for the demonstration. The role played by this agency was limited to participation in early planning meetings, membership on the project steering committee, and submission of required federal reports.

The Minnesota Teamsters Service Bureau, a private non-profit organization that provides support services to Teamsters Union members and their families, was the lead agency providing day-to-day administration of the demonstration. The Teamsters Service Bureau hoped to encourage close labor management cooperation and coordination in the design and implementation of the demonstration project. Project staff at the Service Bureau were responsible for: (1) facilitating the meetings of the Project Steering Committee and Internal Planning Team; (2) overseeing intake and service planning for individual participating workers as well as reporting on individual participant outcomes; (3) providing counseling and crisis intervention services, as needed, to participating workers; and (4) designing and conducting classes in "basic skills enhancement" to participants interested in training in math, reading, and computer skills during off-work hours.

Alliant Techsystems, Inc. wanted to enhance the skills of current machinists so that they could take on a wider range of production tasks and thereby increase the company's flexibility in the competitive defense marketplace. They also hoped to minimize the number of layoffs necessary by offering at-risk assemblers the opportunity to prepare themselves for new jobs as entry-level machinists. Alliant Techsystems participated in the demonstration through management representation on the Project Steering Committee and management and line supervisor representation on the Internal Planning Team. Additional company involvement included: (1) cooperating with the St. Paul Technical College in the conduct of a functional analysis of the company's machinist positions; (2) negotiating with the union to create a new position of "machinist assistant," which was developed so that at-risk assembly workers could begin working in the production area while learning machinist skills; (3) paying the cost of tuition for the machinist training; and (4) paying wages to workers participating in training during working hours.

St. Paul Technical College hoped to gain experience with Alliant Techsystems that would help them assist other manufacturing firms in the local area with on-site training for existing workers. College staff were also excited about developing "train the trainer" sessions to teach experienced machinists how to pass on their skills to new or less experienced machinists. As a key project partner, St. Paul Technical College was responsible for: (1) conducting a functional skills analysis of Alliant Techsystems' machinist positions; (2) developing new curricula for advanced machinist training for workers using multiple-spindle automatic screw machines (ASM) and computerized numerical control (CNC) machines; and (3) developing a curriculum for "workplace basic skills" training, including information about general computer literacy and computer applications in the manufacturing workplace. In addition, the technical college was responsible for providing on-site classes for Alliant Techsystems workers in these new training areas, as well as providing on-site versions of the existing technical college classes for beginning machinists.

Teamsters Local 1145 wanted to preserve employment for as many Alliant Techsystems hourly workers as possible. Thus, the union was pleased to be able to arrange for existing union members to have access to new machinist assistant positions, rather than having the company hire new workers "off the street." In addition, they hoped to enhance the general literacy and occupational skills of the entire Alliant Techsystems hourly workforce, as well as bring the skills of current machinists up to industry standards. This was viewed as a dual strategy to help union members keep their existing jobs, as well as to help them have marketable skills if they were laid off. Teamsters Local 1145 participated on the Project Steering Committee and participated in sensitive negotiations with the firm about how to select at-risk assemblers for machinist training and how receipt of training would affect the job classifications and seniority rights among different classifications of workers.

The **Project Steering Committee**, composed of members of all the project partners and other community agencies, provided guidance during the initial project design stages.

The **Internal Planning Team**, composed of representatives from workers, company line supervisors, and corporate management at Alliant Techsystems, served as an ongoing vehicle for overseeing day-to-day project implementation and suggesting needed modifications in planned training or other project procedures in response to emerging implementation challenges.

THE IMPLEMENTATION EXPERIENCE

Because Alliant Techsystems was a key partner in the demonstration from the outset, firm selection was not an issue for this project. The implementation phase focused on the design and delivery of a range of training activities and other services to Alliant Techsystems employees. A number of unexpected implementation challenges complicated the implementation phase of this project.

CHARACTERISTICS OF PARTICIPATING FIRM

Alliant Techsystems was, in many ways, an odd choice for a firm to participate in a demonstration of "defense conversion adjustment" because it had never indicated a serious interest in diversifying/converting to commercial products or markets. However, the notion of developing a demonstration involving Alliant Techsystems was attractive to project planners: (1) because of the strong involvement by both management and the union; (2) because the firm was willing to make a sizeable financial contribution, including paying all tuition costs for the participating workers; and (3) because the project was designed to enhance worker skills to benefit both the firm and the participating workers, whether they remained employed at Alliant Techsystems or were laid off.

Although Alliant Techsystems management was not interested in diversification into commercial markets, the other project partners thought they had secured strong company commitment to the planned workforce training. Over time, however, the other project partners found it difficult to convince Alliant Techsystems management to live up to its promise to release workers for training during working hours. The appointment of a new Board of Directors and new chief executive officer for Alliant Techsystems soon after the demonstration began may have weakened the company's commitment to completing the planned training. In addition, the demonstration faced a series of implementation challenges (described below) that would have made the completion of training as scheduled extremely difficult, even with strong company buy-in. That planned training was ultimately completed after a four month no-cost extension was a testament to the determination of all project partners to find solutions to each new difficulty. Teamsters Service Bureau staff commented, "It has been a nightmare trying to get the training done."

Perhaps one reason that completion of planned training was so difficult for this project was that Alliant Techsystems management never seems to have been convinced that they needed to reorganize the way they did business and never recognized that worker retraining could be used as a strategy to improve the effectiveness and efficiency of the company as a whole. Unlike firms in other Defense Conversion Adjustment (DCA) demonstration projects that wanted to become more competitive in defense markets through workforce reengineering and retraining, Alliant Techsystems management did not appear to recognize the potential corporate benefits of retraining.

SERVICES

The Alliant Techsystems demonstration emphasized the design and delivery of training to groups of employees in the company's assembly and production facilities in New Brighton, Minnesota. In addition, supportive services were available. After approximately 100 assembly workers were laid off by Alliant Techsystems in March of 1995, these workers were assisted through a separate dislocated worker program operated by the Teamsters Service Bureau.

TRAINING SERVICES

In keeping with the multiple objectives of the demonstration, several different types of training services were designed and offered to Alliant Techsystems workers, including training in (1) "workplace basic skills," which consisted of an introduction to computer literacy and computer applications in the workplace; (2) basic skills, referred to as "enhanced skills training;" and (3) occupational skills for entry-level and advanced machinists. In addition, to promote the dissemination of specific occupational skills from more experienced workers to workers with fewer skills, the demonstration called for the development of "train the trainer" training to support peer-to-peer learning in the workplace.

- **Workplace basic skills training** was developed by the technical college to introduce 160 workers to basic computer literacy skills and provide an overview of the use of computers in manufacturing. It was designed as a 12-hour class to be offered during paid working hours. This course was initially developed for workers in the manufacturing area, to introduce them to workplace applications such as automated resource materials management and automatic data interchange. However, it was ultimately provided to workers in the assembly facility, because machinists in the production area were too busy with occupation-specific training and production pressures. Workers had a very positive reaction to his course, and a number of the assemblers who completed this training indicated an interest in participating in additional training in particular computer applications on an off-hours basis. Thus, this training became an effective tool for recruiting at-risk assembly workers to pursue additional off-hours training in such areas as keyboarding skills, word processing, and spread-sheet applications, as described below under enhanced skills training. By the end of the training period, some production workers were also provided with this training. Approximately 140 workers had received this training by the end of the demonstration period.

- **Enhanced skills training** was designed for all interested workers and was offered on an "off-hours" basis (i.e. outside paid work hours). Classes were scheduled to be accessible to individuals working on both the first and second shift. Initially offered to at-risk assembly workers after surveying worker interest, the enhanced skills training classes included classes in reading skills, math skills at several different levels, and computer skills. After the 12-hour introduction to computer literacy course was initiated during paid working hours, the level of interest in off-hours computer-related classes began to increase. Specific computer courses offered on an off-hours basis included training in the use of spread sheets and word processing software. A total of 89 individuals had taken one or more off-hours enhanced skills training classes by March 1995. Of these, 46 were laid off at the end of March. After the layoffs occurred, it was difficult for the project to recruit interested participants from the remaining assembly workers for continued off-hours enhanced skills training.

Toward the end of the project, when paid work-release time for machinists became increasingly difficult to arrange, the project offered several advanced skills enhancement classes on an off-hours basis, including a course on geometric tolerancing and an advanced math class.

- **Occupational skills training** was targeted to two groups of workers: existing machinists whose skills needed to be upgraded, and at-risk assemblers recruited and selected for new positions as machinist assistants. Advanced machinist training was developed for and provided to 38 current machinists, whose skills needed to be upgraded to industry standards so they could do more frequent set-up and adjustment of machines to produce a wider variety of parts. Entry-level machinist training was provided to a group of 23 at-risk assemblers, who were provided with 300 hours of entry-level machinist training. These trainees began to work in new jobs as "machinists assistants" as soon as they began training. Planned occupational skills training was completed in October 1995 after a four-month no-cost extension was approved by the Department of Labor (DOL). A series of implementation challenges faced by the project in completing the planned machinist training are described below.

- **Train-the-trainer training** was not given the "go-ahead" by Alliant Techsystems until the last month of project operations. During this month, ten experienced operators of automatic screw machines participated in training developed by the technical college to impart techniques for teaching machine set-up and operations skills to their peers.

NON-TRAINING SERVICES

Although the project did not offer basic readjustment and reemployment services to the 100 workers who were laid off from Alliant Techsystems in March of 1995 (these workers were served using separate dislocated worker funding), the Teamsters Service Bureau did offer several "career exploration" workshops to Alliant Techsystems workers on an off-hours basis prior to the layoff, as concern about impending layoffs mounted.

In addition, Alliant Techsystems workers participating in the demonstration were offered family supportive services, as needed, by the Teamsters Service Bureau. The supportive services available from the Teamsters Service Bureau included family counseling, mental health services, substance abuse services, and other types of crisis intervention and advocacy assistance. These services were provided on a confidential basis and no records were kept on the number of demonstration participants that actually used family supportive services.

IMPLEMENTATION CHALLENGES

The project faced two major challenges to implementation of the planned training. These are described below.

The first challenge was that union members were concerned about how selection for and participation in training would affect worker seniority and job security. Initially, the union was reluctant to approve the planned training for at-risk assemblers to become entry-level machinists, because existing machinists, who had retained their jobs "out of seniority order" during previous layoffs, felt threatened. They were concerned that the at-risk assemblers, who had longer tenure with the firm than many existing machinists, would have greater job seniority once they became machinists. To resolve this conflict of interest between assemblers and machinists, the company and the union designed a new job classification for the new machinists, called "machinist assistant," and agreed that the machinist assistants could not challenge the seniority of existing Alliant Techsystems machinists until they completed the full 1800 hours of training required to become a licensed machinist. This seemed a difficult enough requirement that the existing machinists were satisfied. Unfortunately, it relegated the new entry-level machinists to a "second class" status that made it difficult for them to use their new skills on the job. Trainees complained that they were often asked to do janitorial work in the machine shop and were not permitted to practice operating the machines.

A similar concern over how training might affect opportunities for advancement led the union to insist on seniority as the primary criterion to determine access to training for the advanced machinists. The union declined to let the Teamsters Service Bureau conduct any objective testing or skills assessment of existing machinists prior to training, because of discomfort about how this information might be used and whether it would be shared with management. However, it became apparent, after the advanced automated screw machine training was started, that the workers selected for training already knew much of the material that was being presented. The Internal Planning Team helped negotiate a compromise by which a number of workers with seniority gave up their places in training to workers who would benefit more from hands-on training in the set-up and operation of these machines.

The second major challenge was that production pressures made it difficult to release workers for training during paid work hours. At several points during the demonstration, production pressures for the advanced machinists became so severe that the company suspended planned training. During other periods, individual line supervisors were loathe to release workers for scheduled training, so attendance at classes that were held was compromised, making it difficult for instructors to help the class progress at the expected rate.

This pressure became particularly severe after the company laid off approximately 100 assembly workers in March 1995. Although machinists and machinist assistants were not directly affected by this layoff, the layoff invoked a clause in the labor agreement that mandated that if layoffs affected workers who had been at the company 18 years or more, the entire workforce would have to go to a 32-hour work week. This made it extremely difficult for the company to meet its production goals in the manufacturing facility, and forced the company to suspend all training during paid working hours. After a delay of several months, training was begun again, but at a fraction of its former intensity.

PROJECT OUTCOMES

Alliant Techsystems laid off 150 of the 600 hourly workers at its Twin Cities Arsenal in March 1995. Layoffs affected workers at the company's assembly facilities. None of the machinists or machinist assistants receiving training under the demonstration were affected by the layoff. Although the project succeeded in averting layoffs for those at-risk assembly workers who had been selected for entry-level machinist training, there was no suggestion that the project reduced the size of the layoff overall. Approximately 46 of the laid off assembly workers had been participating in the off-hours enhanced skills training classes provided under the demonstration. Once laid off, these workers were no longer eligible for services under the demonstration.

The Minnesota Defense Conversion Adjustment Demonstration succeeded in achieving all of its stated objectives. How some of the objectives were achieved is discussed in some detail below. Project outcomes are then summarized in a table.

Establish a Project Steering Committee. This project took seriously its mandate to develop a working collaboration of diverse partner agencies and established the organizational structures to oversee the demonstration and provide good communication linkages among the project partners. Although the project encountered some serious challenges as it evolved, problems were addressed head-on and project partners showed ingenuity and a spirit of compromise in keeping the project moving forward.

Among the project's key successes was the emergence of the Internal Project Team—comprised of Alliant Techsystems management, line supervisors, and designated worker representatives—as an effective problem-solving group that addressed and developed solutions to a number of implementation challenges, including what to include in various training offerings, and how to recruit, select, and match workers to available training.

Design and Develop a Training Program. The St. Paul Technical College emerged as a particularly valuable project partner in its role developing a customized training approach for the advanced machinist training based on a functional analysis of the machinist function at Alliant Techsystems. It also offered Alliant Techsystems' new machinist assistants an on-site version of its regular entry-level machinist training curriculum. Project partners and training participants spoke highly of the quality of both the entry-level and advanced machinist training curricula and praised the interest of the instructors in helping Alliant Techsystems' workers master the course material.

The project was slower to develop its curriculum for workplace basic skills, and the 12-hour workplace basic skills curriculum that was ultimately developed for use during working hours seemed less than adequate to give Alliant Techsystems' at-risk workers real skills that they could apply in their present or future jobs. However, this curriculum did appear to be effective in stimulating interest among participants in taking additional computer-related classes on their own time, which was an important aspect of the intent of this training.

Conduct Training. Training was interrupted by production pressures repeatedly during the demonstration period. Ultimately, however, the project completed the planned training at the insistence of the union, technical college, and Teamsters Service Bureau. However, it was difficult to predict whether the demonstration-funded training would lead to the continuation of training on a regular basis by Alliant Techsystems. Although the project partners convinced the company to live up to its initial agreement, Alliant Techsystems did not appear to have internalized a commitment to training as a result of its participation in the demonstration. Initial demonstration plans for cross-training advanced machinists were not achieved during the demonstration period. Procedures for ongoing peer-to-peer training, while supported by the "train-the-trainer" sessions held at the end of the demonstration period, were weak.

THE MINNESOTA PROJECT
PROJECT OUTCOMES IN RELATION TO OBJECTIVES

Objectives	Outcomes
Establish a project steering committee to review project design and oversee project implementation.	Objective met. Project found that the Internal Planning Team was particularly valuable in addressing implementation issues.
Design and develop a training program based on a functional analysis of industry and occupational requirements for machinists.	Objective met. Project completed a functional analysis of machinist position at Alliant Techsystems and used information to develop the advanced machinist training curriculum.
Involve all project partners in reviewing the training curricula.	Objective met. Curricula were developed using a participatory process.
Select training participants, conduct training, evaluate training program and modify training modules as needed.	Objective met. Challenges were encountered in selecting training participants (e.g., use of strict seniority criterion led to less than optimal decisions) but were addressed. Additional challenges were encountered in delivering training as planned. Training period was extended and training was finally completed. Training content and instructional methods were modified on an as-needed basis.
Develop and make available supportive services.	Objective met. Although delivery of supportive services was not emphasized in the project design, services were available on an as-needed basis through the Teamsters Service Bureau.
Produce and disseminate training products, guides, and reports.	Objective met. The project produced a variety of training products and guides for dissemination to interested audiences.
Conduct formative and summative evaluations and analyze implications for project activities.	Objective met. Evaluation documented project accomplishments and used focus groups to reflect on lessons learned.

SUMMARY COMMENTS

The Minnesota Defense Conversion Adjustment Demonstration had several notable strong points:

- An initial design that demonstrated a strong company commitment to training as evidenced by over $400,000 in planned company expenditures for training (including tuition and paid work release time for training).
- An effective partnership involving cooperation between labor and management and a commitment to developing compromises as needed to resolve implementation difficulties.
- The involvement of a high quality educational institution committed to providing training relevant to the needs of local businesses and willing to provide training at the work site.
- Development of a training design and delivery system that succeeded in overcoming workers' fears about training and that provided workers access to both occupation-specific training and basic skills training relevant to the workplace.

Project administrators and participants learned a number of lessons as a result of encountering and overcoming various problems and challenges. This experience suggests the following recommendations:

- Plan in advance how to resolve conflicts between production pressures and planned training schedules. Although the company said that it was committed to training, production pressures repeatedly caused them to cancel scheduled training. A short work week mandated by the terms of the labor agreement after the layoff in March of 1995 exacerbated this problem.
- Assess the skill level of trainees prior to training to enable instructors to target instruction to the appropriate skill level. This project's experience demonstrated the problems that arise when individuals are not assessed prior to training. Problems of mismatches between the curriculum and the level of the learners created problems in several classes in which the material was pitched at too high a level for some students and too low a level for others. All participants agreed that increased assessment prior to training would have been beneficial.
- Plan for "hands-on" practice to solidify the learning gains made through classroom instruction. The inability of the company to immediately apply workers' new skills in the workplace not only deprived workers of effective learning tools but deprived the company of the potential benefits of using these new skills.
- Clarify whether project objectives are to increase worker mobility or prevent layoffs. This project's dual objectives made it difficult for demonstration services to focus clearly on either objective. Ultimately, although the company expended substantial resources to train its workers, it did not clearly link this training to strategies to become more competitive in the defense market. On the other hand, the training provided to at-risk workers was not clearly devoted to helping workers prepare for new jobs, since it was never clear whether participants would be applying new skills within Alliant Techsystems or in marketing themselves to a new employer.

FACT SHEET: DEMONSTRATION PROJECT

PROJECT FOR THE CONVERSION OF SARGENT CONTROLS

Project Location	Pima County, AZ	***Grantee***	Pima County Community Services Department (PCCS)
Type of Approach	Dislocation Aversion	***Project Administrator***	Regional Reemployment Center, PCCS; Arizona Council for Economic Conversion
Period Covered by Grant	November 1992–December 1995	***Key Contact***	Rosalyn Boxer, Executive Director, Arizona Council for Economic Conversion
Grant Amount	$749,622	***Geographic Area***	Tucson, AZ

Context

Tucson, following national trends, has witnessed the decline of its manufacturing sector in recent years. Between 1987 and 1992 manufacturing employment dropped almost 5%, with machinery and aerospace industries absorbing a disproportionate share of the cuts. Although larger defense firms and military bases in the area were growing at the beginning of this project, they faced an uncertain future. The viability of smaller defense subcontractors and suppliers was extremely uncertain, even in the short run. Sargent Controls was identified by project planners as one such at-risk firm.

Primary Goals

After working with Sargent Controls in the first phase of the project, planners intended to use their experience to inform a second project phase during which they would work with a larger number of at-risk defense firms. The project sought to help defense-dependent firms:

- Assess their strengths and weaknesses and opportunities for designing and marketing commercial projects.
- Prepare strategic plans for conversion and provide training to employees to support conversion objectives.
- Assist the firms in applying employees' new skills in the workplace.

Key Players

- **The Pima County Community Services Department** — Official grantee and co-administrator of the Defense Conversion Adjustment (DCA) funds through its Regional Re-employment Center.
- **Arizona Council for Economic Conversion** — Small non-profit organization that spurred the creation of the project and co-administered the DCA grant.
- **Sargent Controls** — A manufacturer of valves for the Seawolf submarine.
- **Additional Firms** — 10 small to medium-sized defense subcontractor firms that received company assessments and access to group-based training services.

Significant Outcomes

- Sargent Controls increased sales and reduced defense-dependency, but much of it was a result of acquiring another commercially-oriented firm.
- The key players developed the capacity to assist other firms in the conversion process, and did so in Phase II.

PROJECT FOR THE CONVERSION OF SARGENT CONTROLS

Pima County, Arizona

THE CONTEXT

Employment and population in Pima County are concentrated in the Tucson metropolitan area, which prospered during the 1980's with employment gains of 2.8% annually. Agriculture, retailing, and service industries experienced the greatest growth, and almost 60% of new jobs were created in the latter two sectors. Manufacturing and other goods-producing sectors, by contrast, grew more slowly, and accounted for less than 20% of new jobs in Pima County during the decade.

Defense cuts in the early 1990's led to a moderate decline in Pima County's manufacturing sector. Between 1987 and 1992, manufacturing employment fell from 31,000 to 24,300, a drop of 4.8%. Machinery and aerospace industries were disproportionally affected by downsizing, shedding between 6% and 7% of their total jobs over the same five-year period. Subsequent defense-related job losses in the region were partially offset by the employment growth of Hughes Missile Systems Group, the county's largest private employer, which consolidated defense production lines from across the country in Tucson. Yet, while few questioned the ability of the overall Pima County economy to bounce back from defense cutbacks, the future of Sargent Controls and other small defense manufacturers was extremely uncertain at the start of the demonstration period.

GOALS AND STRATEGIES

The initial goal of the project was to prevent layoffs for at-risk workers at a single defense-dependent manufacturer, Sargent Controls, by helping the plant convert to the production of new products for commercial markets. In addition, the project grantee, Pima County Community Services Department and its partner, the Arizona Council for Economic Conversion, saw the demonstration as an opportunity to develop their capacity to work with struggling defense businesses. In Phase II of the project these goals were combined as the project expanded the pool of firms it sought to assist by adding ten small defense manufacturers.

The initial strategy for preventing layoffs at Sargent Controls was to help the firm to develop new products for commercial markets. Training for workers at all levels of the firm was the centerpiece of this strategy; the original proposal called for instruction in a long list of subjects, among them statistical process control (SPC), marketing, new product development, computer skills, and assorted technical topics. Soon after the project began, however, planners realized that training was only one piece of the conversion process necessary for this firm, and expanded their conversion strategy through the addition of several activities. To supplement the training efforts and provide critical information to assist the firms' managers in planning for conversion, the project design was amended to add detailed assessments of workers' skills and attitudes and of company systems, processes, and equipment.

By adding these new activities, project administrators significantly altered their initial strategy for preventing layoffs at Sargent Controls. They recognized the weakness of retraining alone as a conversion strategy, and modified the project to include support for the conversion planning process. These changes were incorporated in the project's strategies for Phase II, which combined assessment and training as complementary services.

KEY PLAYERS

Key players in the Sargent Controls Project included (1) the Pima County Community Services Department, (2) the Arizona Council for Economic Conversion, (3) Sargent Controls, and (4) during Phase II, an additional ten small defense manufacturers.

The Pima County Community Services Department received and administered the demonstration grant through its Regional Re-employment Center (RRC), which also administers the JTPA Title III program in Pima County. In addition to Title III, the Pima County Community Services Department administers a broad range of public programs, including Job Training Partnership Act Titles II and III, Community Service and Community Development Block Grant programs, a variety of housing-related programs, and services to the homeless. The Community Services Department's Regional Re-employment Center administered the demonstration grant and supervised project activities, but contracted out most grant-related activities to training vendors and the Arizona Council for Economic Conversion (ACEC).

Arizona Council for Economic Conversion (ACEC) is a small, non-profit organization founded in 1990 "to educate defense-oriented industries." When the project began, ACEC had been co-located with the RRC for several years, but moved to independent offices mid-way through the project. As an organization committed to defense conversion, ACEC spurred the creation of the project. ACEC also managed day-to-day project activities, and provided most demonstration services other than training.

Sargent Controls, as the sole participating firm during the first 18 months of the demonstration, was also an active partner, and made substantial in-kind commitments to the project while working with the RRC and ACEC in the management and planning of the demonstration. Sargent Controls produced the initial list of training courses for the demonstration, selected vendors for training and other services, and conferred with the RRC and ACEC frequently on the status and progress of the project. Within Sargent Controls the project was coordinated by the firm's Quality Assurance Manager. Sargent's Chief Executive Officer authorized the project and was aware of its progress, but was never a strong supporter of the demonstration.

Sargent Controls is a wholly-owned subsidiary of a publicly-traded holding company. At the start of the demonstration Sargent's major business was the production of sophisticated, quiet-running valves for nuclear submarines, a product which had seen major cuts in orders. Sargent employed approximately 160 workers, and cuts to the Seawolf nuclear submarine program had left all of them at risk of dislocation.

Additional firms served during Phase II were small defense-related manufacturers, typically suppliers to much larger firms. Firm size ranged from six to 250 employees, with half of the firms under 25 employees. Most were located in the Tucson metropolitan area, but two were based in outlying areas of Pima County.

THE IMPLEMENTATION EXPERIENCE

Activities with Sargent Controls were originally planned for the initial grant period only, but extended through both phases of the project. In addition, during Phase II, the ten additional firms were recruited and participated in a scaled-down set of the same activities as Sargent Controls. Although the services for Phase II firms were not as extensive as those for Sargent, the new firms benefited from lessons learned in Phase I.

RECRUITMENT AND SELECTION OF FIRMS

The Pima County Community Services Department and the Arizona Council for Economic Conversion prepared their demonstration project with the intent of learning how to avert layoffs at defense-dependent firms. Project planners from both organizations were struck by the urgent need for defense conversion, but had no clear model for how to proceed with an actual firm. In the absence of a model for action, project planners identified a single at-risk firm that was willing to participate in a demonstration project. Although this firm, Sargent Controls, was only one of many companies in the Tucson area facing serious declines in defense revenues, it was the only firm among a group of firms approached by planners that appeared qualified and committed to the project's goals.

As the demonstration progressed project planners began to question Sargent's commitment to the demonstration's goals (i.e., entry into commercial markets) and the selection process was revamped for Phase II. Prospective participants were identified from ACEC's existing contacts with defense firms, most of which came from a monthly breakfast meeting of Tucson area technology businesses. ACEC contacted potential participants, set up meetings, and interviewed senior management. To be selected firms had to have fewer than 500 employees, have defense sales of at least 25%, have been or anticipate being affected by defense cutbacks, and want help plus be committed to change. ACEC also screened out firms they considered too far gone to benefit from their assistance.

CHARACTERISTICS OF THE FIRMS SELECTED FOR PARTICIPATION

The following table lists the 11 Pima County firms that received assistance under the demonstration grant, and notes specifically their names, sizes, and major products. Defense-dependency ranged from 55% to 99%, and major products covered a wide range, from desiccants for missile containers to precision aerospace components to facility management and design.

THE SARGENT CONTROLS PROJECT
PARTICIPATING FIRMS

Name Firm	Number of Employees	Product Description
Accurate Products	21	Precision machine shop
AGM Container Controls	60	Desiccants for missile containers
Airtronics	32	Repair and overhaul of aircraft instrumentation
American Tool Service	6	Tool kit liners
A-Tron, Inc.	13	Precision machine shop
CABACO	17	Facility management and design for government facilities
CE Gillman Company	55	Wire harnesses
Geometric Engineering and Manufacturing	30	Precision machine shop
Hutronix	80	Wire harnesses
RE Darling Company	160	Rubber hoses for refueling aircraft in mid-air
Sargent Controls & Aerospace	170	Hydraulic control valves

SERVICES

The services provided to Sargent Controls differed greatly from the services provided to Phase II firms and require separate discussion. Sargent's services centered on an extensive list of training courses, provided to workers at all levels of the company. Training courses addressed 44 distinct subjects, including personal computer software, marketing, total quality management/ statistical process control, communications skills, time management, financial management, and a range of technical subjects, such as geometric dimensioning and tolerances and hydraulics. Classes ranged from two to twenty hours long. Some courses, such as leadership and computer-assisted design, were targeted to specific individuals in the company, while much larger groups of workers attended courses in marketing and statistical process controls.

In the case of one training course, follow-on services proved crucial to success. Eighty of Sargent Controls' workers participated in SPC classes, but once the courses were completed, had little motivation to apply their skills. Sargent hired the course instructor to serve as facilitator, and within weeks self-directed, cross-functional teams were solving a variety of problems, from the elimination of paper work to the improved design of specific parts.

Additional demonstration services developed when it became apparent that Sargent Controls lacked the commitment or capacity to perform these functions independently. These services included assessments of (1) employee skills and attitudes and (2) the company's capacities for commercial production. The assessment of employee skills was completed for Sargent by an outside consultant, selected through a competitive process. The assessment was based on a survey of Sargent's employees, and resulted in a report on worker skills and attitudes. Although it was hoped that the assessment of workers' skills would help identify training activities needed for success in commercial markets, the report prepared by the consultant was perceived by management to be of limited value. This service had little impact on Sargent Controls, other than causing the addition of two training topics not originally planned, management sensitivity/leadership and personal computer skills.

The remaining gap in helping Sargent Controls plan for conversion was an assessment of Sargent's capacities for commercial production. This assessment was performed by a small group of dislocated, but highly experienced, defense workers recruited from the RRC's Title III program. Specific elements of the assessment included an infrastructure analysis (with assessments of design and engineering capabilities, manufacturing capabilities, marketing, and organizational structure), an in-house product market analysis, and the development of a strategic marketing plan. Potential new products and customers were identified in the report, which also concluded that Sargent needed to develop a marketing department in order to convert. Most of these recommendations, however, were not adopted in response to this report, because the president was not yet convinced that conversion was feasible.

To avoid the mistakes of Phase I, services during Phase II were more closely focused on supporting the firms to develop and implement viable conversion plans. Assessment and training were also major features during Phase II of the project, but both were greatly changed from their design for Sargent Controls.

As with Sargent Controls, the assessments for Phase II firms were conducted by small teams. Only five of the firms, however, received assessments under the demonstration grant. The other five had previously received assessments under a project funded by the Department of Defense Office of Economic Adjustment. The assessments were conducted by two teams, one composed of dislocated defense workers and one composed of graduate business students. The time period required to conduct these assessments varied from four to eight weeks, and culminated in the production of a lengthy report on each company. Major sections of the report addressed assessment, marketing plans, and recommendations. The assessment section covered financial situation, human resources, general infrastructure, marketing and sales, engineering, manufacturing, management information systems, and quality. The marketing plan section analyzed firms' marketing objectives, target markets, and marketing mix. Recommendations covered training related to conversion, general training recommendations, and recommendations for changes not related to training. The reports were generally well-received by companies, but the project ended before impacts became evident.

Core training courses for the ten additional firms recruited for Phase II included marketing and manufacturing-based cost accounting. Top management from the ten firms attended these courses, which were designed to provide them with the skills necessary for developing a conversion strategy. Employees from the ten firms also received training in a range of subjects that included personal computer skills, business grammar, customer service, financial management, human resources, hydraulics, interpersonal communication, leadership, material control, production control, project management, purchasing, supervisory skills, and time management. Many of these courses were made available when classes planned for Sargent Controls were determined to have excess capacity, and workers from the Phase II firms sat in classrooms with workers from Sargent Controls. In addition, several firms also received training in areas specific to their company's needs, such as computer-aided design.

OUTCOMES

The Sargent Controls Project did not begin with well-defined objectives, and did not develop quantifiable objectives after its inception. The objectives that existed for the project were qualitative and broadly defined, such as the conversion of Sargent Controls into a successful commercial enterprise, or an increase in the ability of the RRC to prevent layoffs in the future at other firms. The priority given to these objectives also varied among the project partners, and Sargent Controls, the RRC, and ACEC each had its own expectations for the project. To the extent that they can be clearly defined, project objectives and their related outcomes are summarized in the table below.

SARGENT CONTROLS PROJECT
PROJECT OUTCOMES IN RELATION TO OBJECTIVES

Objectives	Outcomes
Regional Re-employment Center (RRC): Prevent layoffs at Sargent Controls, and/or prepare workers for post-layoff jobs. Develop capacity to assist businesses.	Objective met. More jobs were created than lost. RRC also had begun a business assistance program at the end of the demonstration.
Arizona Council for Economic Conversion (ACEC): Convert individual defense firms to commercial production, and increase organizational capacity to assist firms in the future.	Objective met. Sargent Controls expanded its commercial activities and ACEC developed its ability to help firms convert.
Sargent Controls: Enable firm to survive. Increase revenues.	Objective met, with qualifications. Due to circumstances outside its control, Sargent has not been able to expand its submarine business, but its new areas of commercial work hold promise for the firm's future. The company' s survival is no longer in question.

According to the RRC, the project's objectives were to prevent layoffs at Sargent Controls and, failing that, to provide Sargent's workers with training that would help them find employment elsewhere. The RRC also hoped to increase its own capacity to work with businesses to prevent layoffs in the future. These objectives were fully met. Although Sargent Controls lost a small number of positions during the course of the project, most job losses were due to attrition. The firm ultimately gained a strong foothold in commercial markets, although this was accomplished largely through the acquisition of a commercial bearing manufacturing firm. The RRC also succeeded in its aim to increase its ability to serve businesses. At the end of the demonstration RRC had plans to continue to conduct assessments for local businesses based on the model that had worked so well during Phase II.

ACEC's intent to learn how to assist firms in the conversion process was also realized during the course of the project. Although the experience of working with Sargent Controls did not fulfill all their expectations, ACEC managed to redesign and present services to at-risk firms in a much more successful manner during Phase II. The ten additional firms served during Phase II uniformly praised the assessments and recommendations they had received from ACEC, and recognized their value in assisting the conversion process.

In addition, ACEC hoped to help Sargent Controls convert to commercial production. This outcome was achieved, although largely through Sargent Controls' acquisition of a commercially oriented manufacturing firm. It is unclear how much the demonstration activities contributed to this outcome.

At the start of the demonstration, Sargent Controls' defense work accounted for more than 80% of company revenues. Sargent's President wanted to enable the firm to survive as a manufacturer of critical submarine components. However, due to cuts in military submarine programs, this objective was unachievable. At least partly as a result of participating in the DCA demonstrations, Sargent's top management realized the firm had to develop a commercial strategy to survive. Initial commercialization efforts focused on developing precision parts for commercial aircraft. During the demonstration period, Sargent also acquired a successful bearings manufacturer. With the acquisition of Kahr Bearings, Sargent expanded its overall size and sales, but, more importantly, it gained a commercial marketing capacity that it had never had as a defense supplier. Although it is difficult to predict Sargent's long-term success, its situation and outlook has improved considerably since the start of the demonstration. By project end, commercial sales accounted for approximately 50% of total company sales.

SUMMARY COMMENTS

Phase I of the Sargent Controls Project stands out for its devotion of project resources to the conversion of a single firm. Over $200,000 in demonstration funds was allocated to training for Sargent's workers, and release time for employees engaged in training cost the firm more than $2 million. In Phase II of the demonstration, this design changed substantially with the recruitment of ten new firms for a scaled-back set of services, but Sargent continued on its original training path, eventually completing 44 separate courses.

The experience of the project teaches a number of lessons about designing and implementing a dislocation aversion project:

- Define expectations of companies upfront, and insure management commitment to project goals. Sargent Controls signed on to the project without formally agreeing to convert to commercial production, and top management resisted project efforts to encourage change. In Phase II, the project applied this lesson by interviewing Chief Executive Officers and confirming commitment in person prior to selecting firms for participation.
- Provide services that offer value to firms. Except for training, top management at Sargent saw little value in demonstration services, damaging the credibility of project administrators.

In Phase II, the project offered firms a much narrower range of services, but ones that firms found immediately applicable.

- Link project services to inform each other. The assessments completed for Sargent Controls were an afterthought and contributed little to each other or to other services. The assessment of worker skills was never utilized and the assessment of the firm also had little impact. In addition, neither of these assessments informed the design of training.

- Companies need more than training. Without a plan to convert or assistance in implementing new skills in the workplace, training is much less valuable. At Sargent Controls this lesson was most notable in the lack of activity that followed the completion of SPC training. Once Sargent hired a facilitator to spark action among workers, problem-solving efforts took off.

- Provide services at all levels of the firm. Training at Sargent Controls was provided for top management, middle management, line workers, and administrative staff. Workers at all levels, not just line workers, benefitted from training. In Phase II the core curriculum was even targeted to top managers, whom project administrators identified as the key to conversion for these firms.

FACT SHEET: DEMONSTRATION PROJECT

RHODE ISLAND WORKFORCE PROTECTION PROGRAM (WPP)

Project Location	Providence, RI	***Grantee***	Rhode Island Port Authority and Economic Development Corporation (RIPA)
Type of Approach	Dislocation Aversion	***Project Administrator(s)***	RIPA and Rhode Island Department of Economic Development
Period Covered by Grant	November 1992–June 1995	***Key Contact(s)***	Michael Walker, Project Manager, Office of Defense Economic Adjustment (ODEA)
Grant Amount	$500,000	***Geographic Area***	The State of Rhode Island

Context

The economy of Rhode Island is heavily dependent on the defense industry. A 1991 survey found that one out of every ten employers and one out of every three workers identified themselves as dependent on the defense industry in some way — the Electric Boat Division of General Dynamics is the largest private employer in the state. Defense downsizing had already resulted in the loss of over 8,000 jobs in the region between 1987 and 1992 when the Defense Conversion Adjustment (DCA) grant program was announced.

Primary Goals

The Workforce Protection Program was conceived as a coordinated response to the needs of defense-dependent firms and at-risk workers in Rhode Island. The project attempted to replicate the state's existing Competitiveness Improvement Project (CIP), targeting small- to medium-sized defense-dependent firms and offering grants to assist them in becoming more competitive through worker training. The project sought to:

- Deliver training to 400 workers in 20 selected firms in new technologies or competitive practices that were in demand at the firms.
- Assist firms in using the skills of newly trained workers to support increased competitiveness in defense markets and conversion to commercial markets.

Key Players

- **Office of Defense Economic Adjustment, RIPA** — Administrative home of the project.
- **Rhode Island Department of Economic Development** — Fiscal manager of the DCA grant.
- **ODEA Steering Committee** — Comprised of interagency executives appointed by the governor, this group provided oversight and support for WPP.
- **Human Resources Investment Council (HRIC)** — Oversight agency for the CIP and provider of state matching funds for the WPP grant.

Significant Outcomes

- WPP grants were awarded to 12 firms for worker retraining/skills upgrading.
- Selected workers in each of these firms were trained in skills relevant to conversion efforts.
- Several companies reported growth in sales after workforce training.

STATE OF RHODE ISLAND
WORKFORCE PROTECTION PROGRAM

THE CONTEXT

Rhode Island's economy has a well-documented vulnerability to defense cutbacks. A 1991 survey found that 3,088 employers (one of every ten) and about 166,000 workers (one of every three) had identified ties to the defense industry. Rhode Island was and is highly dependent on submarine building. The largest private employer in the state is the Electric Boat Division of General Dynamics, the nation's major producer of submarine hulls. In addition, a large number of small subcontractors manufacture parts to be used in submarines. Electric Boat and other large prime contractors headquartered out of state represent a particularly unstable employment base: beyond the influence of state policy, they are likelier to shut down than convert to non-military products. Rhode Island lost an estimated 8,000 defense-related jobs between 1987 and 1992.

Rhode Island has had previous experience with defense downsizing which helped state officials to understand and plan for the economic effects of this most recent round of defense cutbacks. In 1973, at the end of the Vietnam War, the Navy abruptly shut down the base at Quonset Point and withdrew the fleet from Newport, costing the state more than 28,000 jobs directly and leaving an 18% unemployment rate. Therefore, in 1990, state staff were quick to recognize the first signs of the military reductions to come, and they were quick to take action. After a round of planning memos, the Governor initiated a study of the state's needs, funded in part by a 1991 grant from the Office of Economic Adjustment and carried out under the auspices of the Defense Economic Adjustment Program (DEAP). Researchers surveyed public and private employers to quantify the state's dependency on defense spending and the effects of downsizing by economic sector and locality. Published in early 1993, the study's report recommended state government action to mitigate the problems associated with defense downsizing, especially for affected workers. Action items included a substantial infrastructure improvement project to attract new industry, support for multi-state efforts to serve employers and workers, and new programs to upgrade the skills of incumbent workers in defense-dependent companies and facilitate transfer of skills to non-defense applications. It was this last-mentioned plan element that became the cornerstone of the Department of Labor's Defense Conversion Adjustment demonstration grant application in 1993.

Rhode Island's small size is an important influence on state government decision-making and shaped the implementation of the Workforce Protection Program (WPP) in many ways. The "small town" atmosphere and cooperative culture facilitated collaboration across agencies within state government. Frequent interactions among key actors in state agencies allowed flexible planning and quick response to identified needs for action. Because Rhode Island shares labor markets with neighboring states, economic factors beyond its control affect its residents' well-being, and so Rhode Island state staff are active participants in region-wide economic development and planning efforts.

GOALS AND STRATEGIES

The goal of the Workforce Protection Program (WPP) was to preserve the jobs of current employees in small- and medium-sized defense-dependent companies by funding employers to upgrade worker skills. The overall strategy was to replicate the existing Competitiveness Improvement Project operated by the state Department of Employment and Training and the Human Resources Investment Council. The WPP, like that project, used a request-for-proposal process to identify companies interested in preparing themselves and their workers to compete in new markets. The project was designed to accommodate individual company needs and build on their abilities, using company-designed training. Companies were expected to contribute substantial matching funds to assure commitment. The hope was to enhance companies' competitiveness and their ability to retain workers, particularly those trained through the grant.

The WPP project's initial objective was to provide $25,000 in grant funds to each of 20 small- and medium-sized defense-dependent companies. The funds were to be used to retrain and upgrade skills for a total of 400 incumbent workers, assisting them to retain employment they might otherwise have lost. As it became clear that difficulties recruiting firms would make this initial objective infeasible, the state began to emphasize instead their underlying, less measurable objectives:

- To mitigate the effects of reductions in defense spending on small- and medium-sized defense subcontractors and suppliers in Rhode Island by helping those companies provide training for their workers, so that
  - the workers learn new skills (new to them, preferably new to the company);
  - the companies use those new skills to help in diversifying their products/services and their markets; and
  - workers and companies transfer the skills and technologies developed and sharpened through their defense-related work to commercial applications.
- To assist Rhode Island companies in becoming more competitive and retaining incumbent workers, particularly workers trained within the WPP program.

KEY PLAYERS

The structure of the WPP was complex and changed over the life of the project. Changing or unclear lines of authority caused delays and complications in project implementation.

The Rhode Island Port Authority and Economic Development Corporation, a quasi-public entity, was the grant recipient, but did not begin to be involved in managing the project until the winter of 1994-95, eight months after the beginning of the project.

The Office of Defense Economic Adjustment (ODEA), within the Rhode Island Port Authority and Economic Development Corporation, was created by the Governor's Executive Order in February 1993. This office was intended to be the DOL/DCA grant's administrative home, but no strong leadership ever accompanied that designation. The original WPP Project Director held the title of ODEA Director, but that position and that office were only funded late in 1994, when the WPP Program Manager position was created. The ODEA was phased out in late 1995, as the WPP was ending.

Project Manager in the Office of Defense Economic Adjustment (ODEA). Hired in October 1994, he worked closely with the Project Director and assumed more and more management functions over time, until his job ended along with the WPP.

Rhode Island Department of Economic Development (RIDED). The Port Authority and RIDED have overlapping (identical) Boards and the same chief executive. RIDED fiscal managers carried out all the DOL/DCA grant's financial transactions.

The Director of the Research Center on Business and the Economy, University of Rhode Island's College of Business Administration, was the WPP Project Director during the grant's initial months, April and May of 1994. Although she was named the ODEA Director, the ODEA never had a budget during her tenure. Because of her full-time faculty role, she simply operated the WPP during her spare time during the spring of 1994. She was scheduled to take on the ODEA Director role in the summer of 1994. However, the WPP suffered from the effects of transition when, in the late spring of 1994, this individual accepted a high-level appointment at the Department of Defense and moved to Washington. She was one of the authors of the DEAP planning study and the creator and visionary leader of the WPP project.

The Chief of the Office of Strategic Planning in the state's Department of Administration replaced the original Project Director of the WPP. He was the co-author of the DEAP planning study, and the only other person with the required experience, commitment, and credibility to lead the WPP. However, he had to struggle to fit WPP management tasks, such as visiting participating firms, into a schedule already filled with urgent policy-shaping activities. In addition, as he acknowledged, his office is better suited (in terms of staff availability and locus within state government) for conceptualizing and initiating projects, rather than overseeing ongoing operations.

The ODEA Steering Committee. This interagency executive group, initially appointed by the Governor to spearhead the 1991 planning process, provided oversight and support for the WPP, particularly after the departure of the first Project Director in the spring of 1994. It set the tone for the WPP; its members played roles ranging from policy advisors to proposal reviewers. The high level and diverse composition of this group facilitated coordination and communication between the project and other state and regional activities related to defense conversion, economic development, and employment.

Human Resources Investment Council (HRIC) oversees the Competitiveness Improvement Project (CIP), a program of grants to Rhode Island companies, providing worker training for the purpose of increasing the state's economic competitiveness. The CIP is overseen by the Rhode Island Department of Employment and Training and funded by a special payroll tax on employers, dollars that were formerly part of the unemployment insurance fund. The CIP is the prototype for the WPP, and provided the dollars that constituted Rhode Island's state match for the WPP grant. Many of the same agency executives (from RIDED, the Chief of Staff of the Governor's Office and others) that served on the ODEA Steering Committee also serve on the HRIC.

The WPP's personnel changes and complex structure had two lasting effects. They caused delays in getting the Round 1 grantees funded and operational, and they interrupted outreach efforts. The result was a disappointingly small number of applications by firms for participation in Round 1.

THE IMPLEMENTATION EXPERIENCE

RECRUITMENT AND SELECTION

The project targeted workers in small- and medium-sized companies that (1) had received at least 25% of their revenues over the prior two years from the Department of Defense or its prime contractors, and (2) were developing or installing new technologies, work methods, or products, or entering new (to them) markets.

The state conducted two rounds of an RFP process in order to award grants to companies for worker retraining or skills upgrading. The initial outreach process consisted of placing a newspaper advertisement, conducting presentations, and holding a bidder's conference. Staff were disappointed in the response to the Round 1 RFP: only four firms submitted applications, and only three of those were eligible for funding.

For the Round 2 RFP, state staff intensified outreach, added media appearances and a direct mass mailing, simplified the RFP itself, and removed requirements that applicants show evidence of commitment to total quality management. They also used the first cohort of three grantee companies to help with outreach to other firms by having them make presentations, as they had specified they would in their grant agreement. Finally, staff took advantage of the well-known and well-publicized CIP grant process, which typically attracts more high-quality proposals than it can fund, by conducting the Round 2 RFP process simultaneously. In fact, three of the companies funded during Round 2 had initially applied for CIP funding, and were diverted to WPP.

The WPP project required companies to contribute a dollar-for-dollar match, in order to assure company commitment to the projects they proposed, as well as to augment the federal funds. At least one-half of the company match was required to be in the form of cash; the rest could be in-kind (e.g., training facilities, or pay for workers' time spent in training).

CHARACTERISTICS OF FIRMS SELECTED

All three companies selected in Round 1, and five of the eight Round 2 companies, had fewer than 100 employees. The table below shows the characteristics of WPP firms and grants.

THE RHODE ISLAND WORKFORCE PROTECTION PROGRAM PARTICIPATING FIRMS

Name of Firm	**Number of Employees** (in R.I.)	**Topic Areas of Training**					**Amount Of Grant**
		Marketing	TQM	Technology	Diversity	HPWO	
Analysis & Technology	233	✓		✓			$25,000
SYSCON Corp.	150	✓					$25,000
American Systems Corporation	35	✓		✓			$25,000
New England Instrument	89		✓		✓	✓	$25,000
Guill Tool & Engineering Co., Inc.	40	✓	✓	✓	✓	✓	$25,000
SEA Corp.	60	✓		✓			$24,000
Systems Resource Mgmt Inc.	25			✓			$15,867
McLaughlin Research Corporation	300	✓		✓			$25,000
American Industrial Casting, Inc.	46			✓		✓	$25,000
Vibtech, Inc.	12	✓		✓		✓	$25,000
Kearflex Engineering Co., Inc.	23	✓	✓		✓		$23,250
EG&E Sealol	N/A	✓	✓	✓			$25,000

Of the 12 grantee firms, five were manufacturers, and many of the remainder were software or high-technology companies. Like many other defense-dependent companies, most WPP grantees were extremely competent in producing the goods and services they sold, but less skilled in the marketing techniques needed to compete outside the military procurement process.

Companies were free to designate which workers would be trained. At three of the four firms visited, workers were selected for training by managers, based on their demonstrated ability and interest, their positions of leadership within the work group, and their ability to pass knowledge along to others or implement the lessons learned. The strategy in those firms appeared to be to select high performing staff and equip them with advanced skills that would give the company a competitive edge in seeking new types of work and new customers. In the fourth company, all workers were invited to participate, but they were told that much of their time would not be compensated.

SERVICES PROVIDED

The project had no single established training intervention; applicant companies were invited to propose any form of worker training that would increase the companies' competitiveness in non-defense markets. Each company's project was unique, company-driven and company-controlled.[1] Services consisted of individual training activities aimed at meeting the companies' and workers' needs, such as the following:

- One company sent six workers to advanced courses at Rhode Island School of Design to broaden and update their computer graphics and related technical skills. Courses included computer photoshop, computer graphics, and computer illustrating. Two of those employees also attended an intensive digital imaging workshop. The company hoped to expand its markets to include state government and the advertising industry.

- One engineering and information technology company undertook a series of customized classes delivered on-site, aimed at helping workers understand the management and information needs within the health care industry that can be met with high-tech engineering and computer processing capabilities. Lectures from a medical school faculty member were supplemented by discussions, field visits to nearby health care facilities, and presentations by guest speakers. Individual workers undertook independent study projects to assess the feasibility of a particular business venture—e.g., patient records control. They researched the extent of the unmet need, the competition, and the "fit" between the need and the available expertise among company staff. The project was created and managed by middle managers. All staff were invited to participate in the training, but were told that the majority of the time spent in training would not be reimbursed.

- One company, expert in the design, machining and assembly of navy submarine components, sponsored in-house classroom training in engineering design, sought outside computer software training for employees, and conducted individualized in-house training in fixturing, inspection, and toolmaking delivered in-house by the President and other managers. All these training elements contributed to the company's becoming ISO 9000 certified in a very short time. The company was in the process of perfecting and marketing a highly-specialized and newly-patented technology for making plastic tubing with a number of potential commercial applications.

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[1] In fact, there was a noticeable contrast between the relatively "hands-off" approach taken by WPP and the way staff of the state's CIP program communicates with participating companies. CIP staff were described as treating each company "as though it were the only company in the world." They respond immediately to requests for information and assistance, actively seek ways to be helpful, and in short treat companies as valued customers. That approach may well be an important contributor to the CIP's success and account for the high esteem in which this program is held in the business community.

- Another company undertook a process of market analysis and marketing development; cross-trained workers; provided training in basic skills, computer skills, and statistics; upgraded the workplace and equipment, all for the purpose of implementing statistical process control and total quality management.

The most frequent training areas were marketing and new technology, each listed by three-fourths of participating companies. Total Quality Management and related training was included as a topic for training by one-third of the grantees.

PROJECT OUTCOMES

For the project as a whole, the only outcomes that could be measured with certainty were the number of companies participating and the number of workers trained or retrained. Since each participating firm's training plan was self-initiated, the intended outcomes differed across companies. The state did not even systematically collect information from participating firms about the numbers of workers who actually participated in or completed training. Therefore, the only available outcome measure was the number of companies participating. It was premature to assess whether the training helped participating firms to decrease their dependency on defense-related markets or increase sales of commercial products.

Interview respondents in four companies were enthusiastic about the accomplishments made possible by the grant. Several company representatives took the time to attend a reception for grantees in which they related success stories and discussed ways of carrying out similar efforts in the absence of the grant. On the other hand, two of the four companies visited were unable to point to any company-level change attributable to the project, principally because workers became extremely busy and could not find the time to follow through and develop new products and markets that would have made good use of the training they had received.

THE RHODE ISLAND WORKFORCE PROTECTION PROGRAM
PROJECT OUTCOMES IN RELATION TO OBJECTIVES

Objectives	Outcomes
Provide grants to 20 defense-dependent firms to pay for skills training.	Objective partly met. Grants were made to 12 companies. Two companies were able to document improved competitiveness, diversification was evident in some firms and none of the participating firms experienced layoffs.
Provide retraining or skills upgrading to 400 workers.	Goal partly met, although exact information on number of trained workers was not available. Workers were successfully trained in skills needed to support commercial enterprises in several firms.

SUMMARY COMMENTS

The Workforce Protection Project was characterized by several promising elements:

- ***The project's objectives were drawn from a strong previous research effort*** that pointed to the need to involve small businesses in a multi-pronged defense conversion effort. Rhode Island staff recognized early that defense adjustment efforts were going to be needed, and undertook a thorough and well-carried-out planning study.

- ***The WPP had strong key staff and high-level interagency involvement.*** The Steering Committee linked the project with the Department of Employment and Training, the Port Authority and Economic Development Corporation, the Department of Economic Development, the University's Research Center on Business and the Economy, and other high-ranking officials and important individuals. This Steering Committee had the potential to create visibility for the project within state government, to influence related defense adjustment initiatives, and to develop a coherent approach to economic development and employment policy. It also gave the project and potentially also participating firms access to high-level resources and expertise that could assist with problem-solving. Though management responsibilities were subsequently turned over to a less visible manager, people at high levels had already been brought on board and had made known their commitment to the project's success.

- ***The WPP required participating firms to participate in outreach efforts*** aimed at new potential grantees, and formalized that requirement in the grant agreement. Peer-to-peer outreach increased participation in the second round of recruiting.

- ***Participating companies were enthusiastic about their workers' new skills, and some of the companies could show evidence of increased readiness for commercial markets.*** One company had achieved ISO 9000 certification; another was implementing statistical process control and had made noticeable productivity improvements. Although workers in two companies were unable to use their newly-acquired skills immediately, they believed that the training was likely to lead to concrete positive results in the longer term.

- ***Companies were asked to provide a dollar-for-dollar match for the grant funding.*** As a result, grant funding was directed to companies that had a strong pre-existing commitment to the goals of the project. Many companies in fact contributed far more than an equal match.

- ***Project leaders learned from early outreach failures and adopted more successful methods in the second round.*** They were able to fund nine proposals in Round 2, as compared to only three in Round 1.

Rhode Island's experience also shows that similar projects would be wise to consider the following:

- Projects require clear and consistent direction, vision, or leadership. The combination of the change in Project Director and designation of a Project Director who lacked the time needed to be an active leader may have allowed the project to drift and remain unfocused. The pattern of interagency staffing and responsibilities was complicated and sometimes unclear. The state delayed providing funding and full-time staff for the Office of Defense Economic Adjustment. Key staff were too high-level; the project suffered from a lack of dedicated staff to carry out day-to-day management and contacts with firms.

- Projects which adopt a laissez-faire approach to overseeing participating companies' efforts are unable to document project-level accomplishments. The state left the design and specification of training entirely to companies' discretion and required relatively little documentation of their activities or outcomes. As a result, they were unable to say with certainty how many workers benefitted from WPP-sponsored training.

- Projects should maintain close contact with participating firms. The state may have missed opportunities to provide supportive technical assistance or to learn transferable lessons from companies' experiences in training their workers.

Many of the project's problems may be traceable, at least in part, to the loss of the key leader at a crucial point in the project, an occurrence that could not have been prevented nor foreseen. However, the project had available—and may not have made best use of—a useful "mentor" or prototype project, namely the Competitiveness Improvement Project. The WPP might have been more successful had it adopted some of the management techniques practiced by the CIP, in particular their strong focus on customer satisfaction and their decision to view participating companies as customers.

FACT SHEET: DEMONSTRATION PROJECT

SAN DIEGO COUNTY

DEFENSE CONVERSION ADJUSTMENT DEMONSTRATION

Project Location	San Diego, CA	*Grantee*	San Diego Consortium and Private Industry Council
Type of Approach	Dislocation Aversion, Worker Mobility	*Project Administrator*	San Diego Consortium
Period Covered by Grant	November 1992–June 1994	*Key Contact*	Ron Grabler, Coordinator, San Diego Consortium
Grant Amount	$470,660	*Geographic Area*	San Diego County, CA

Context

In the early 1990's, San Diego County was one of the most defense-dependent regions in the country. When defense downsizing began, the impact was expected to be severe: 50,000 relatively high-wage jobs were expected to be eliminated between 1989 and 1996. The San Diego Consortium and Private Industry Council took the lead in planning for economic development, securing funds from the California Trade and Commerce Agency and the Department of Defense's Office of Economic Adjustment prior to the demonstration period.

Primary Goals

The Defense Conversion Adjustment (DCA) grant supported activities that were part of the larger ongoing strategic planning process. The grant supported efforts to:

- Assess the skills needed by local employers.
- Design and provide skills training to enable dislocated defense workers to secure new jobs.
- Develop the capacity to support the conversion of high-technology companies to commercial markets.
- Create new employment opportunities for dislocated workers by supporting new business start-ups.

Key Players

- **San Diego Consortium and Private Industry Council (PIC)** — Formal DCA grantee and primary administrator of grant-supported activities.
- **CONNECT Program of the University of California at San Diego** — Conducted Defense Conversion Roundtables; provided entrepreneurial training for dislocated workers interested in starting high-technology businesses.
- **Center for Applied Competitive Technologies at San Diego City College** —Providing training and technical assistance to at-risk firms and dislocated defense workers.
- **San Diego Economic Development Corporation** — Conducted surveys and compiled information to inform the planning process.

Significant Outcomes

- One hundred and forty dislocated defense workers received training; entrepreneurial training was particularly effective, leading to the creation of 18 high-tech business start-ups.
- Six Defense Roundtables were held.
- The project did not develop early intervention services for firms transitioning to commercial markets.

SAN DIEGO COUNTY DEFENSE CONVERSION ADJUSTMENT DEMONSTRATION

San Diego, California

THE CONTEXT

Prior to the defense drawdown, San Diego County was one of the most defense-dependent regions in the United States, with several large military installations and dozens of large and small defense contractors and subcontractors. Fueled by a strong economy with unemployment well below the national average (a low of 3.9% in 1989), San Diego County experienced rapid growth throughout the 1980's. During the early 1990's, however, economic growth slowed and unemployment rose, in part because of the national recession, but also in large part because of cutbacks in the defense sector.

Massive cutbacks by defense contractors and subcontractors were a blow to the San Diego community. At the beginning of the 1990's, San Diego defense firms employed over 70,000 people. From 1991 through 1993, an estimated 16,000 of these workers were laid off, and this downsizing was projected to continue for several years. Because of the impact of these layoffs on the regional economy, projections are that over 50,000 jobs will be lost in San Diego County between 1989 and 1996.

The layoff of large numbers of defense workers presented a serious challenge to the San Diego community. The defense manufacturing jobs that were lost had offered wages significantly higher than those of other local jobs in non-defense manufacturing and services. In addition, a large proportion of the dislocated workers were highly skilled engineers, technicians, and managers. Facing a job market flooded with job seekers with similar skills, many of these workers remained unemployed for months or even years, with little hope of finding employment in San Diego in their fields of expertise.

Beginning in 1990, the San Diego community actively addressed defense conversion issues through task forces that brought together representatives from state and local government, employment and training agencies, educational institutions, community-based organizations, and private industry. In 1992 San Diego received funds from the California Trade and Commerce Agency and the Department of Defense's Office of Economic Adjustment to develop an economic adjustment program. Conducted by the San Diego Consortium & Private Industry Council, the project included the active involvement of a work group of individuals from organizations such as those listed above. When the Defense Conversion Adjustment (DCA) demonstration request for proposal (RFP) was announced, several interested members of this work group met. Based on what they were learning through the economic adjustment project, these individuals, representing several San Diego organizations, identified several activities for inclusion in the DCA demonstration proposal that seemed particularly congruent with the goals of the DCA demonstration and that would further the area's long-term defense conversion strategy.

GOALS AND STRATEGIES

Because the San Diego demonstration project was based on a comprehensive long-term economic adjustment strategy and involved several different agencies interested in different aspects of defense conversion, the DCA project goals and objectives were quite sweeping and ambitious. The project involved several major components, each with its own distinct goals and activities. Indeed, the San Diego project was the only DCA project that tested strategies in each of the three approaches: community planning, worker mobility, and dislocation aversion.

The proposal listed four broad goals: (1) develop the knowledge base needed to identify and provide appropriate readjustment and retraining services to dislocated defense-related workers; (2) demonstrate an effective process for developing local capabilities in skills training for high-technology industries, including entrepreneurship training; (3) provide a reality-based, well-integrated system of technical assistance and early intervention services to at-risk firms and employees; (4) create new high-tech employment opportunities for displaced or at-risk workers, either in new growth industries or through self-employment resulting from commercial application of defense research, products, or technologies.

To attain these goals, the proposal identified ten specific objectives:

- Develop a defense conversion database to be used to design and implement appropriate readjustment and retraining services for dislocated defense workers, and to provide technical assistance and early intervention services to at-risk defense firms and employees.
- Provide a variety of entrepreneurship training components for up to 150 dislocated and at-risk defense employees.
- Provide training for at least 140 dislocated and at-risk defense employees.
- Provide training and technical support for at least five dislocated and at-risk workers to start new businesses.
- Develop a human resources database to link dislocated and at-risk workers to known sources of demand for their skills, thereby shortening the average time between dislocation and job placement.
- Create at least five startup high tech enterprises through the Defense Conversion Roundtable and High Tech Entrepreneurship component.
- Use CONNECT Roundtable meetings to improve technology transfer between defense research, products, and technologies and commercial markets and applications.
- Use the Human Resources Database developed through the Economic Conversion Program, the Economic Development Corporation (EDC), CONNECT, and the Career Center to identify areas of critical need for skills training, both current and future.

- Use the Technical Assistance and Early Intervention component to avert further dislocations among at-risk companies by addressing the defense industry customer/supplier network and working with defense companies to find suitable commercial markets for existing products.

- Retain San Diego's high value-added industrial base by providing support and retraining for skilled dislocated defense workers to find jobs in other high tech occupations.

KEY PLAYERS

This project brought together four organizations in an active partnership.

The **San Diego Consortium & Private Industry Council**, which administers all of the Job Training Partnership Act (JTPA) programs in San Diego County, was the lead partner. Since 1989, the Consortium had served thousands of dislocated defense workers. To assist workers dislocated from defense and other industries, the Consortium developed a network of "one-stop access" Career Centers across San Diego County that provide basic readjustment and retraining services. The Project Coordinator, Job Developer, and support staff for the DCA demonstration were housed in the largest of these Career Centers.

The **CONNECT program of the University of California at San Diego** uses a wide range of educational and networking activities to pursue its goals, which are "to help high-tech companies in San Diego become more successful, educate service providers to support high-tech industry more knowledgeably, create linkages between the University and local industry and, through these, stimulate local economic development." CONNECT conducted two activities for the demonstration: a training course for dislocated defense workers in starting high-technology businesses and defense conversion roundtables, which brought together senior executives from defense firms to learn about opportunities for expanding into commercial high-technology markets.

The **Center for Applied Competitive Technologies (CACT)** at San Diego City College is one of the State of California's eight regional manufacturing centers and a National Institute of Standards and Technology (NIST) Manufacturing Technology Center affiliate. The Center provides technical assistance and training services to fulfill its mandate of helping San Diego manufacturing companies modernize and compete more effectively in the global economy. For the demonstration, CACT developed and provided training to dislocated defense workers in CATIA (three-dimensional design software) and modern manufacturing skills (such as Total Quality Management and Manufacturing Resource Planning).

The **San Diego Economic Development Corporation (EDC)** is a private non-profit organization that seeks to retain and attract businesses for San Diego County. EDC conducted several activities for the demonstration, including conducting a survey of local businesses and creating a database from the results.

One of the strengths of this demonstration project was the active partnership between the participating organizations. The Consortium was the grantee and oversaw the activities conducted by the other partners (who had subcontracts with the Consortium). All of the partners, however, participated in the hiring of the demonstration project coordinator, and the whole team met monthly to review progress toward goals and resolve problems as a team. This active partnership led to increased cooperation and coordination in securing funds from outside of the demonstration. For example, the partners brought their experience working together on the demonstration to the design of a three-year $5.7 million grant from the Department of Commerce's Economic Development Agency, awarded in early 1994. This project included a variety of activities conducted by the four demonstration partners and several other organizations, including a high technology resource center, a business incubator, a world trade center, a seed capital fund, and a technology alliance council.

THE IMPLEMENTATION EXPERIENCE

Because of the sweeping and multi-faceted nature of the demonstration's goals, project staff found that they could not pursue all of the goals within the constraints of project funding. Worker mobility components of the demonstration ultimately received by far the most attention, while dislocation aversion received the least attention. In particular, the strategy of providing technical assistance and early intervention services to at-risk firms was not pursued during the demonstration period. Project planners had not developed a specific plan for these dislocation aversion activities or included them in the project budget, so they were set aside in favor of other activities that had been more thoroughly developed in the planning stage.

COMMUNITY PLANNING ACTIVITIES: IDENTIFYING SKILLS IN DEMAND

In seeking to design training programs for large numbers of white-collar workers in a rapidly-changing job market, the Consortium was frustrated by the limitations of traditional methods of developing labor market information. Therefore, one of the goals of the project was to develop and test a "Human Resources Database" as a new tool for determining skills in demand in the local job market. To accomplish this goal, the Economic Development Corporation (EDC) designed and conducted a survey of local employers. After receiving only 44 responses to an initial mail survey of 1,000 San Diego manufacturing firms, EDC resurveyed a sample of 500 firms by fax, more than doubling the number of responses (110 surveys). Although limited in size, the sample of responding firms was judged to be representative of San Diego County in terms of firm size, industry, and type of business.

The survey provided the project with several useful pieces of information, including hiring projections for 1993 and 1995 and a ranking of skills in demand. Hiring projections indicated that the local economy would remain flat throughout 1993 before beginning a slow expansion during 1994. The skills that employers said they were looking for in new employees were the following, in order of the frequency of response: Total Quality Management (TQM), quality assurance, problem solving, document control, and material safety. In response to the survey, the CACT developed a course in these five skills for demonstration participants (described in detail below). The survey also asked respondents if they would be interested in hiring an engineer or technician trained through the program, and the demonstration job developer followed up with those who expressed interest.

The project compiled the survey results into a Human Resources Database. The project planners had hoped to combine this database with information from two previous surveys into a master "Defense Conversion Database" that would inform all of the workforce retraining defense conversion activities being conducted in the county. They were not able to combine the databases in the way they had hoped, however, because the three surveys had been conducted at different points in time and lacked enough overlap in the questions that were asked.

The project partners learned a number of lessons through this attempt to develop an effective method of generating labor market information. They came away from the experience convinced of the value of such a survey for generating useful information, but also more aware of the challenges of designing, administering, and analyzing a survey. For future surveys, they plan to consider contracting with a market research firm.

WORKER MOBILITY ACTIVITIES: RETRAINING DISLOCATED DEFENSE WORKERS

The San Diego demonstration included three major classroom training components: training in starting a high-technology business, training in CATIA (three-dimensional design software), and training in modern manufacturing skills (including Total Quality Management and Manufacturing Resource Planning). These three activities were targeted toward different groups of defense workers. In addition to these courses, a subset of the CATIA trainees also received instruction in semiconductor manufacturing. All of these retraining services are described below.

The goal of the **High-Technology Entrepreneurial Training Program**, conducted by CONNECT, was to provide training that would lead to the development of high-tech businesses that not only would generate income for the entrepreneur, but also would grow and provide employment for other laid-off defense professionals. The training was made up of four elements: seminars on the "nuts and bolts" of starting a company, student presentations of their proposed companies to a panel of experts, a short "mentorship" with an executive in a high-technology company, and individual counseling. CONNECT developed this training with a consideration of the time limitations of class participants (many were conducting a job search or working in part-time, temporary employment). Three-hour seminars were held one afternoon a week for approximately three months, augmented by two all-day workshops. Recognizing the advanced level of the participants, CONNECT staff found top professionals to teach each of the seminars. To assist in the development of all phases of this course, CONNECT brought together an Advisory Panel of San Diego professionals with expertise in high-technology entrepreneurship (including attorneys, accountants, trainers, and successful high-technology entrepreneurs).

CONNECT used several strategies to recruit applicants with a good chance of developing successful businesses, and found that the most effective outreach strategies were prominently placed newspaper articles and personal contacts. Training applicants went through a rigorous screening process. The first step was completing an application form that asked for detailed information about the proposed business, including: product and technology, marketing, finance, and management. Promising candidates went through personal interviews with CONNECT management. The Advisory Panel assisted with the final selections. Nineteen participants were enrolled in this program.

One of the unique aspects of this training course was its ability to link participants with sources of venture capital. CONNECT sponsors an annual event called the Financial Forum, which brings venture capitalists from all over the country to hear high-technology entrepreneurs present their business plans. One of the goals of the training was to help participants prepare to compete for a chance to present at the Financial Forum, or participate in a related event called the Concept Forum (for start-ups seeking less than $1 million in venture capital). Three class members presented at the Financial Forum, and five others participated in the Concept Forum.

At the end of the grant period, 18 of the 19 high-technology entrepreneur training participants were actively pursuing the development of their businesses (the 19th had found employment and had decided not to pursue his business at that time). The trainees' businesses were at various stages of development, with at least two already in the process of manufacturing a product, and several generating revenues. Many of the trainees were still working on activities such as incorporating and seeking venture capital. The following examples illustrate the wide variety of ways in which entrepreneurial training participants utilized defense technology for commercial applications:

- Two trainees became partners in a project to apply technology originally developed for submarines to monitor music played on all forms of media, which will radically enhance the mechanisms by which musicians are paid their copyright fees. Their company, which was featured in a recent Wall Street Journal article, is seeking an investment of $5.6 million.

- Another trainee incorporated her company and received an SBA loan. This business tests corrosion-resistant coatings, and currently has a contract with the San Diego utility company.

- Another trainee entered into a partnership and began manufacture of lightweight, high-performance bicycle components using reinforced aluminum metal matrix materials.

The second retraining component, training in **Computer-Aided Three-Dimensional Interactive Applications (CATIA)**, was developed in response to requests from local employers and from laid-off engineers (clients of the Career Centers). At the time the project was planned, many San Diego firms were anticipating the need to convert to CATIA, and were asking both for engineers trained in CATIA and also for the development of the capacity to provide ongoing CATIA training at the local level. For the demonstration, the CACT developed and taught an 80-hour CATIA class to 74 design professionals (five separate sections with approximately 15 students each), including engineers, designers, and drafters.

The project recruited participants for the CATIA training from among the thousands of laid off defense workers who already were clients of the San Diego Career Centers. Interested design professionals completed both a written application and a personal interview, which screened for design experience, computer knowledge, and seriousness of the applicant's job search. After completing the training, participants worked with the demonstration job developer to search for jobs. Unfortunately, this introduction to CATIA did not appear to have made a significant difference in helping participants find jobs. Although the job placement rate eventually exceeded 65%, the average time-to-reemployment for the CATIA trainees was about eight months, about the same as for participants in the general Title III program. Project staff attributed the disappointing results of the CATIA training to several factors, including: (1) the San Diego job market was extremely crowded, particularly for engineers; (2) advances in other design software packages reduced the need for San Diego firms to convert to CATIA; and (3) nationally, firms that use CATIA typically hire engineers with at least 1,000 hours of CATIA experience.

Toward the end of the grant period, the project developed an additional 120-hour training component in semiconductor manufacturing for ten of the CATIA trainees who had not yet been placed. A local training provider developed the training in coordination with local firms. Although eight of the participants in this training component were employed by the end of the grant period, none were working in the semiconductor industry. In developing this training component, project staff seriously underestimated the stiff resistance semiconductor manufacturing companies would show toward hiring former defense design professionals, even such professionals who insisted that they were willing to start "at the bottom rung" in a new industry and work for much lower wages than they had received in their defense jobs. It also was a questionable strategy to pick semiconductor manufacturing as a new unrelated target occupation for these former design professionals, after the CATIA training had failed to make them attractive to local employers.

The last retraining component, training in **Manufacturing Technology Skills**, was developed specifically in response to the survey of employers conducted by EDC. This 88-hour course, developed and taught by the CACT, covered a range of skills under the three categories of Total Quality Management, Resource Planning and Process Control, and Leadership for Lean Company Management. Participants for this course were recruited from the pool of Career Center clients. Unlike the CATIA course, which targeted engineers and designers, this training project sought participants representing a broad range of occupations associated with manufacturing. Each of the three course sections (of about 20-25 students each, for a total of 71 participants), contained students with varying backgrounds. This was done intentionally so that workplace simulations would be more realistic (e.g., problem-solving within cross-functional teams). One of the innovative aspects of this training component was that TQM skills were taught in the context of what all the participants had in common: conducting a job search with a background in defense work.

The participants in this training did find jobs more quickly than the CATIA trainees, and by the end of the grant period the project had nearly placed 65% of the trainees. Whether or not the TQM training provided that "extra something" that helped participants find employment in a market saturated with job seekers with similar skills is difficult to assess. By the time the TQM training was completed, the economy was beginning to improve slightly, and dislocated defense workers in general were having an easier time finding employment. Also, a major difference between the TQM training participants and the CATIA trainees was that the TQM participants came from all types of occupations associated with manufacturing, while the CATIA students came from a narrow range of engineering and design occupations. This meant that the TQM trainees had skills that could transfer more easily to a broader range of jobs, and they also were more willing than most of the CATIA engineers to take jobs with lower pay. All of the TQM trainees who were contacted reported that the training had made little, if any, difference in their job search.

DISLOCATION AVERSION ACTIVITIES: DEFENSE CONVERSION ROUNDTABLES

The San Diego project included one dislocation aversion strategy, Defense Conversion Roundtables. This strategy was managed by CONNECT. Its roundtables, held once each quarter for a total of six, brought together senior-level defense executives to learn about commercial high-technology opportunities. Each roundtable focused on a specific topic such as commercial electronics, high-tech communications, and environmental technology. Each roundtable featured three speakers representing a variety of perspectives such as those of successful high-technology entrepreneurs, representatives from market research firms, potential clients (such as Bay Area Rapid Transit) who need a particular piece of technology that is not yet on the market, and defense companies that have been successful moving into commercial markets. The roundtables were well-attended and often included lively question-and-answer periods. Participating defense firms did not, however, seek further technical assistance from CONNECT and CACT in pursuing defense conversion activities in the way that was envisioned by the project planners.

PROJECT OUTCOMES

The table below lists the San Diego project's proposed objectives with an assessment of whether each was achieved or not. As shown, the project was successful in meeting some of its goals; more than 140 dislocated defense workers received training, the human resources database was created, and the high-tech entrepreneurial training program did lead to the creation of substantially more business start-ups than the proposed five. Although these businesses are in various stages of development, several have the potential to grow to a size where they would provide employment for significant numbers of San Diego workers.

The project was not as successful in achieving several of its other proposed outcomes, including creating a defense conversion database and providing technical assistance and early intervention, for reasons that were described above.

THE SAN DIEGO PROJECT
PROJECT OUTCOMES IN RELATION TO OBJECTIVES

Objectives	Outcomes
The project will develop a defense conversion database to be used to design and implement appropriate readjustment and retraining services for dislocated defense workers, and to provide technical assistance and early intervention services to at-risk defense firms and employees.	Objective not met. Although limited survey responses were used to determine content of Total Quality Management training, the project was not able to combine various databases in the way that was envisioned by project planners. No technical assistance and early intervention services were provided to at-risk firms.
The project will provide a variety of entrepreneurship training components for up to 150 dislocated and at-risk defense employees.	Objective not met. Nineteen participants received training in high-technology entrepreneurship. The San Diego Private Industry Council and Consortium also provided an introductory class in small business start-up to dislocated defense workers. Because this activity was funded through the regular Title III program, data were not collected on the number of workers completing the class.
The project will provide training for at least 140 dislocated and at-risk defense employees.	Objective met. Seventy-four dislocated defense workers received training in Computer-Aided Three-Dimensional Interactive Application, and 71 dislocated defense workers received training in TQM and other modern manufacturing processes.
The project will provide the training and technical support for at least five dislocated and at-risk workers to start new businesses.	Objective met. Out of the 19 participants in the high-technology entrepreneurial training course, 18 were developing new enterprises. These new businesses were in various stages of development, such as incorporating, seeking investors, beginning to manufacture a product, or providing consulting services.
The project will shorten the average time between dislocation and job placement by developing a human resources database to link dislocated and at-risk workers directly to known sources of demand for their skills.	Objective not met. The project was not able to create this database in the way that had been envisioned by project planners.
The project will create at least five startup high tech enterprises through CONNECT's Defense Conversion Roundtable and High Tech Entrepreneurship component.	Objective met. See Goal 4 comment. To the knowledge of project staff, no new enterprises had come about through the Defense Conversion Roundtables.
The CONNECT Roundtable meetings will improve technology transfer between defense research, products, and technologies and commercial markets and applications.	Unknown if objective met. The Roundtables were well-attended, but project staff did not have any formal way of following up to find out about any resulting cooperation between the participating companies.
The Human Resources Database developed through the Economic Conversion Program, Economic Development Corporation, CONNECT, and the Career Center will identify areas of critical need for skills training, both current and future.	Objective met. The project did conduct a survey of employers that identified areas of need for skills training.
The Technical Assistance and Early Intervention component will help to avert further dislocations among at-risk companies by addressing the defense industry customer/supplier network and working with defense companies to find suitable commercial markets for existing products.	Objective not met. The Technical Assistance and Early Intervention component did not occur.
The project will help to retain San Diego's high value-added industrial base by providing the support and retraining for skilled dislocated defense workers to find jobs in other high tech occupations.	Objective not met. Too few workers trained to make a difference.

SUMMARY COMMENTS

The San Diego demonstration project involved a true partnership among agencies that previously had little experience working together. This working partnership led to further partnerships and an additional large grant, and increased the visibility of the employment and training agency within the broader community.

The project included a highly successful high technology entrepreneurial training program. This program model could be replicated in other areas that have large pools of very talented, senior-level defense industry scientists and managers.

The project was an ambitious one, and several of the services originally promised were not delivered. The envisioned Human Resources Database did not materialize, in part because the staff lacked sufficient expertise in the design and analysis of employer surveys. Dislocation aversion activities, particularly technical assistance and early intervention to at-risk firms, were also not provided as promised.

The design for skills training contained some serious problems that did not become obvious until the project was up and running. More specifically, the short-term training provided was not sufficient to give participants a competitive edge in the local labor market. Although project staff attempted to address some of the weaknesses of the CATIA training program after these became apparent, they were not fully successful in overcoming the barriers former defense design professionals faced in moving into new occupations.

APPENDIX B

SUPPLEMENTARY PROJECT FACT SHEETS

FACT SHEET: SUPPLEMENTARY PROJECT

AMPHENOL AEROSPACE DEFENSE DIVERSIFICATION PROJECT

Project Location	Sidney, NY	***Project Administrators***	Amphenol Aerospace and several public agencies
Type of Approach	Dislocation Aversion	***Key Contact***	Keith Nicholas, Manager of Human Resources, Amphenol Aerospace
Key Sources of Public Funding	Title III National Reserve Account Funds, under Defense Diversification Program (DDP) rules		
Grant Amount/ Period of Support	Approximately $1,600,000 in public funds from 1993 to 1996	***Population Served***	Amphenol employees, training allocated at managers' discretion

Context

The Southern Tier region of New York State is home to numerous large multinational defense and non-defense firms. Corporate restructuring in the late 1980's resulted in substantial downsizing by major employers. Subsequent cuts in defense spending exacerbated regional economic decline. Prior to massive reductions in defense contracts, the region had the tenth highest concentration of defense-dependent manufacturing firms in the U.S. Sidney-based Amphenol, a division of Bendix Corporation's Connector Operations, and a manufacturer of electrical systems, has been consolidating its workforce since 1988 as result of defense downsizing.

Primary Goals

The grant is supporting the development and implementation of a strategic plan to further the company's objective of "expansion and diversion into new markets." The company plans to increase its commercial sales from 40% to 50% over a two-year period, primarily by developing new commercial applications for its current products. Toward that end, Amphenol is using training to support a company-wide "culture-shift" to increase the firm's competitiveness. Amphenol seeks to:

- Identify workforce training needs and implement an appropriate training program.
- Create a more streamlined, efficient, and cost-effective production process.

Key Players

- **Amphenol Aerospace** — Administrator of the DDP grant.
- **Public Agencies** — Staff from New York Department of Labor (DOL) and two local Service Delivery Areas (SDAs) played important roles in the planning and implementation of the project.
- **Training Providers** — Broome Community College, Ingersoll Engineers, Parametrix Technology Corporation, and Proudfoot USA provided training to selected workers at Amphenol.

Significant Outcomes

- Selected Amphenol employees began training in September 1995 in: (1) increasing customer focus; (2) Total Quality Management; (3) Leadership; (4) Concurrent Engineering; (5) Skills upgrading; and (6) pro-Engineering. Although this training will include instruction in high performance workplace skills, the latter is not the company's primary focus.
- The facility recently expanded employment by 150 workers and is planning for continued expansion.

FACT SHEET: SUPPLEMENTARY PROJECT

BATH IRON WORKS
TECHNOLOGY REINVESTMENT PROJECT (TRP)

Project Location	Bath, ME
Type of Approach	Dislocation Aversion
Key Sources of Public Funding	Technology Reinvestment Project (TRP), Department of Defense, In-kind financial and other firm contributions
Grant Amount/ Period of Support	Approximately $4.5 million in public funds from 1993 to 1996
Project Administrator(s)	Bath Iron Works; International Association of Machinists (IAM)
Key Contact(s)	Buzz Fitzgerald, Chief Executive Officer, Bath Iron Works; George Kourpias, President, IAM
Population Served	All Bath Iron Works employees

Context

The New England region has witnessed the near-collapse of its defense industry. During the last five years, defense-related employment in private industry has fallen over 30%. Bath Iron Works, a subsidiary of General Dynamics, is the largest employer in the State of Maine, claiming 8,700 employees. The firm also influences the local economies of New Hampshire and Vermont, where many of its employees and suppliers reside. Producer of the Aegis Destroyer, Bath Iron Works faces the reality of massive reductions in defense spending.

Primary Goals

The company seeks to develop new commercial markets to supplement its core defense business. Project goals include:

- Identify new markets for commercial cargo ship building.
- Reengineer the workplace to increase efficiency and ability to compete in commercial markets.
- Provide training in high performance work organization skills to all employees and provide multi-craft training to production workers to support teaming in the new workplace.
- Insure union–management input throughout the process of restructuring.

Key Players

- **Bath Iron Works** — Administrator of the TRP grant and partner in developing and implementing restructuring plans.
- **IAM** — Partner in developing and implementing restructuring plans.

Significant Outcomes

- New labor-management contract negotiated that serves as a foundation for comprehensive changes in the workplace.
- 2,000 employees have been trained or are enrolled in training to become skilled in a second craft; many have served as volunteer mentors or trainers for other employees.

FACT SHEET: SUPPLEMENTARY PROJECT

CALIFORNIA SUPPLIER IMPROVEMENT PROGRAM (CALSIP)

Project Location	Clovis, California	*Project Administrator*	Economic Development Network of the CA Community College System (ED > Net)
Type of Approach	Dislocation Aversion	*Key Contact*	Marilyn Sweet, Coordinator for West Los Angeles Community College
Key Sources of Public Funding	Chancellor's Office of the CA Community College System	*Population Served*	Small- to medium-sized defense aerospace suppliers
Grant Amount/ Period of Support	Project is currently self-supported by firms and training grants to firms	*Geographic Area*	State of California

Context

At the beginning of the 1990's, the state of California was home to numerous defense contractors and suppliers. To increase their competitiveness in defense markets, suppliers needed to learn total quality management (TQM) and high performance skills. After the defense sector began to contract, supplier firms also needed assistance to become competitive in commercial markets.

Primary Goals

Originally, the CalSIP program was designed to keep defense suppliers and prime contractors in California. The project's objectives were to:

- Introduce senior managers of supplier firms to the benefits of training workers in total quality and continuous improvement skills.
- Design a core curriculum and deliver classroom or on-site training in high performance workplace skills (HPWO) to employees of participating firms.

Key Players

- ED > NET — The economic development network of the Chancellor's Office of the California State Community Colleges was assigned the responsibility of developing the CalSIP curriculum components, with assistance from an oversight body of senior executives from major defense aerospace firms.
- Centers for Advanced Competitive Technologies —Technology training centers at local community colleges through which employees of enrolled firms receive training.
- Participating Firms — Firms targeted for participation included defense suppliers that wanted training in TQM skills.

Significant Outcomes

- A replicable and easily customized curriculum was developed and delivered to 110 enrolled firms.
- Many other firms participated in over 300 CalSIP workshops held throughout the state.
- Project has had difficulty recruiting defense firms and has begun to target manufacturing firms in other industries.

FACT SHEET: SUPPLEMENTARY PROJECT

CHANDLER EVANS

Project Location	West Hartford, CT	***Project Administrator(s)***	Chandler Evans and United Auto Workers Union, Local 405 (UAW)
Type of Approach	Dislocation Aversion		
		Key Contact(s)	Wyman Ward, V. P. of Human Resources, Chandler Evans; Bob Sullivan, President, UAW Local 405
Key Sources of Public Funding	Technology Reinvestment Project (TRP), Department of Defense, State economic development funds (grants and loans)		
		Population Served	All Chandler Evans' employees
Grant Amount/ Period of Support	Approximately $3.5 million in total public funds from 1993–1995		

Context

The State of Connecticut has witnessed the near-collapse of its defense industry. During the last five years, defense-related employment in private industry has fallen over 30% in Connecticut, and in the New England region as a whole. Chandler Evans downsized considerably in the late 1980's and early 1990's. It was at risk of default, when the company and the UAW cooperated in the development of restructuring plans. The company was awarded a TRP grant for the design and manufacture of the Variable Displacement Vane Pump (VDVP), which it expects will revolutionize fuel controls in both military and commercial aircraft.

Primary Goals

The grant was intended as a catalyst for comprehensive reengineering—both the physical facility and its management were reorganized, with training and worker involvement key to the process. With the grant funds, Chandler Evans seeks to:

- Reengineer the workplace, its management and the union wage-structure, in a coordinated effort to increase efficiency and ability to compete in both commercial and defense markets.
- Develop new markets in an effort to decrease defense dependency.
- Provide training in high performance work organization skills to all company employees and provide multi-skill training to production workers, insuring that all training is integrated into and supports restructuring objectives.
- Insure union–management input throughout the restructuring process.
- Increase Chandler Evans' business and recall laid-off union workers.

Key Players

- **Chandler Evans** — Administrator of the TRP grant and partner in developing and implementing restructuring plans.
- **United Auto Workers (UAW) Local 405** — Partner in restructuring process.
- **Training Providers** — Local community colleges, and independent consultants, and parent-company consultants served as training providers.

Significant Outcomes

- Chandler Evans reversed its ratio of defense-to-commercial business from 80%/20% to 20%/80% in three years.
- Chandler Evans is providing high-quality training to all of its employees.
- Management-union cooperation is strong; the company is beginning to recall laid–off union workers.

FACT SHEET: SUPPLEMENTARY PROJECT

ESL VISION 20/20

Project Location	Sunnyvale, CA	***Project Administrator***	Electro-Magnetics Systems Lab (ESL), a division of TRW
Type of Approach	Dislocation Aversion	***Key Contact***	Bill Isabel, Director of Human Resources
Key Sources of Public Funding	No public funds used	***Population Served***	All ESL Employees

Context

The state of California, home to hundreds of defense contractors and subcontractors, has been severely affected by defense-industry downsizing. Although ESL had served a particular niche —designing and building intelligence and reconnaissance systems— and had not yet been adversely affected by defense cuts, the company was 100% defense-dependent through 1993 and recognized the necessity of developing new commercial markets.

Primary Goals

ESL attempted to promote commercial culture within the firm and support the start-up of separate commercial divisions. Specific objectives included:

- Establish "New Ventures," a business incubator program designed to launch new business start-up based on individual employees' ideas.
- Train ESL managers in strategic planning and marketing skills and assist them in developing ideas for new commercial ventures that would build on ESL's core competencies.
- Teach defense employees how to benefit from the commercial culture developed in the business incubator program.

Key Players

- ESL — Division of TRW; initiated Vision 2020 initiative using its own funds.
- New Ventures — Division of ESL established as an incubator for new commercial business ideas of ESL employees.
- Training Providers — New Ventures hired three staff with commercial industry experience to provide training in business planning and marketing skills.

Significant Outcomes

- 120 ESL managers trained in strategic planning for commercial markets.
- 18 ideas for new businesses were taken up by New Ventures; nine were launched and one had successfully grown to 60 employees by the end of 1994.
- When defense downsizing reduced ESL's profits and those of its parent company, the company could no longer support the project; existing projects were encouraged to seek outside venture capital.

FACT SHEET: SUPPLEMENTARY PROJECT

LOCKHEED MARTIN CONTROL SYSTEMS DEFENSE DIVERSIFICATION PROJECT

Project Location	Johnson City, NY	***Project Administrators***	Lockheed Martin and several public agencies
Type of Approach	Dislocation Aversion	***Key Contact***	Dave DeSantis, Program Manager for Education and Training Programs, Lockheed Martin
Key Sources of Public Funding	Title III National Reserve Account Funds	***Population Served***	Employees of Lockheed Martin
Grant Amount/ Period of Support	Approximately $938,000 in total public funds from 1993 to 1996		

Context

The Southern Tier region is home to numerous large multinational defense and non-defense firms. Corporate restructuring in the late 1980's resulted in substantial downsizing by major employers. Subsequent cuts in defense spending exacerbated regional economic tensions. Johnson City-based Lockheed-Martin Control Systems had been consolidating its workforce for two decades due to the combined effects of a decline in heavy manufacturing, a series of mergers and acquisitions, and defense downsizing. The facility currently employs 1,041 workers.

Primary Goals

The grant supported the establishment of a new commercial division within the firm. The company hired 25 dislocated workers from other (non-military) firms and put them to work in the new division, which was co-located within Lockheed Martin, but not integrated with the rest of the company. Staff for support functions are "loaned" to the new venture from other divisions. The success of the new venture hinged on the company's ability to train its employees in high performance work organization (HPWO) skills. The Defense Diversification Program (DDP) grant supported this effort. The company sought to:

- Coordinate with the Center for Community Education at Broome Community College to establish a "Train the Trainer" program for the firm.
- Insure that employees in the commercial division receive training in both the specific skills required for them to develop commercial applications for defense products, and HPWO skills that would spill over into the entire firm.

Key Players

- **Lockheed Martin** — Administrator of the DDP grant and partner in planning and establishing the company's new commercial division.
- **Public Agencies** — Staff from New York Department of Labor (DOL) and two local Service Delivery Areas (SDAs) played important roles in the planning and implementation of the project.
- **Training Providers** — Broome Community College, familiar with Lockheed Martin as a result of having provided services to the company on numerous occasions, developed a program tailored to the needs of the company.

Significant Outcomes

- HPWO skills and multi-skill training opportunities have been extended to employees outside the commercial division.
- Commercial division has grown and hired ten new employees.

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